THE PAPER INDUSTRY

A MONTHLY EDUCATIONAL JOURNAL

AUGUST, 1932

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at the Calender Stack in your desire to "let sleeping dogs lie"?

The regular users lost that fear after the first run of ***Calender Black J.***

And are using it for their Jet Blacks and with Acid Orange G S for their deepest Chocolate Browns—and admit they are saving money.

A Geigy leaflet will give you the picture, or,

A trial run will tell the whole story.

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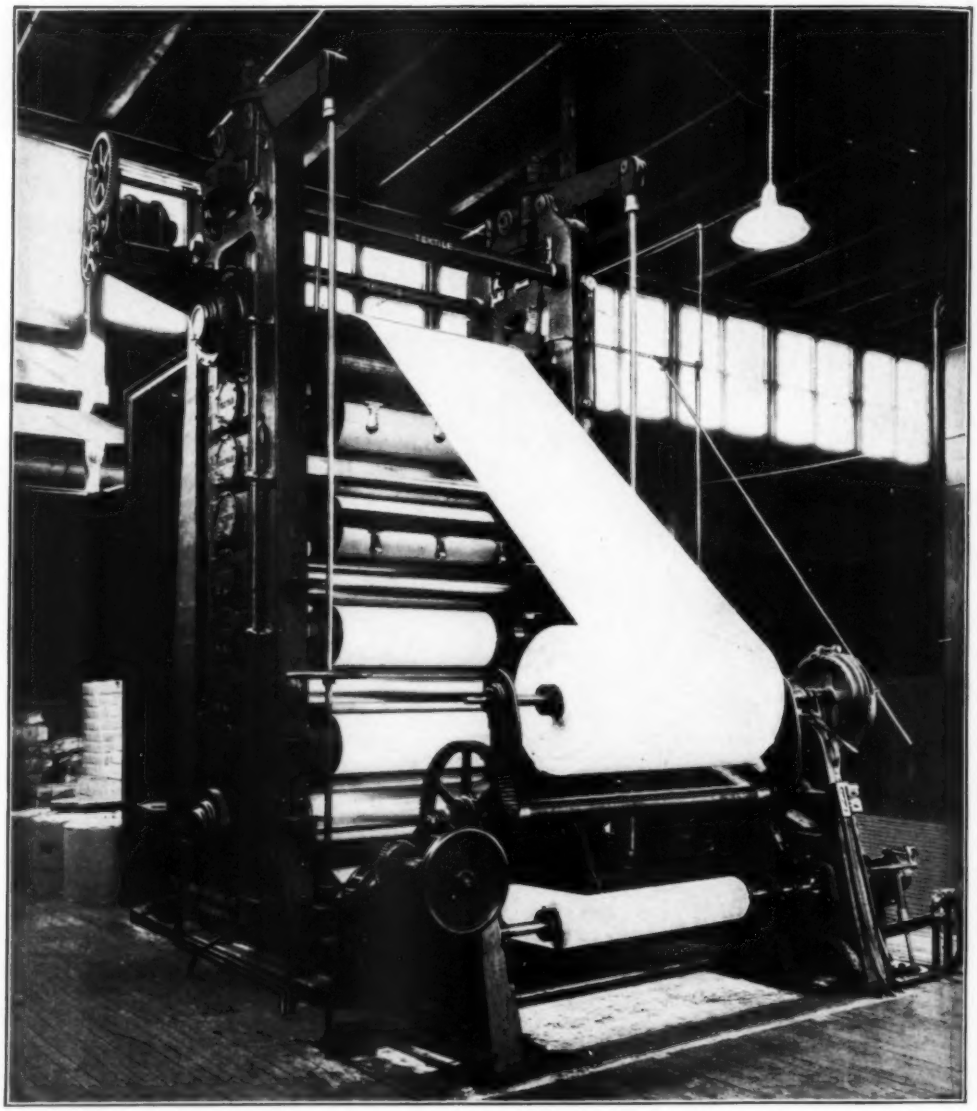
Super Calenders

● **to any width and number of rolls**
Equipped with roller and ball bearings



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Embossing Calenders
Cotton and Paper Rolls

The Textile-Finishing Machinery Co.

New York Office
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Southern Agent
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THE Saturday Evening Post, Collier's and other big magazines today carry not only four-color advertisements, but have extended the use of these four colors to their editorial pages. Newspapers are rapidly taking up color printing, and today over 300 metropolitan newspapers are printing advertisements and editorial features in two to four colors.

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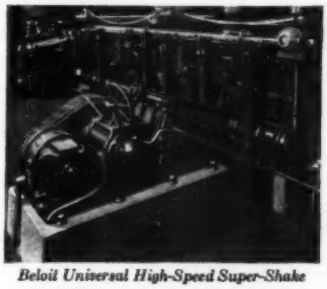

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Is the *Modern* Way

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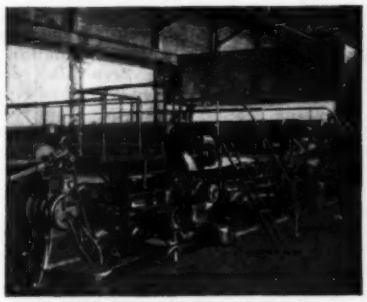

Beloit Suction Couch and First and Second Suction Presses

The BELOIT

THE PAPER INDUSTRY

AUGUST, 1932
Vol. XIV—No. 5

A MONTHLY EDUCATIONAL JOURNAL
Devoted to the Interests of the Pulp and Paper Industry

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. . *and valuable feature of the* LOBDELL ROLL GRINDER

Speed and Accuracy in the grinding of Paper Mill Rolls, depends entirely upon the *rigidity* of the mounting of the grinding wheels. The elimination of many unnecessary moving parts in the design of the LOBDELL Roll Grinder has accomplished this desirable result. Other features incorporated in the design of the LOBDELL Grinder which make it the speediest and most accurate machine for this purpose are; (1) Provision for leveling the bed, to compensate for wear or foundation changes. (2) The automatic "crowning device," which gives exact predetermined crown by the simple setting of a micrometer scale to a table supplied with the machine. (3) Enclosed, direct-connected geared driving head. (4) Automatic Lubrication throughout. (5) Protection of moving parts, etc.

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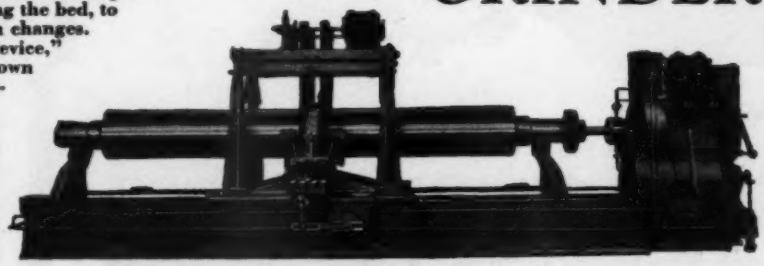

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USE TEST SPECIAL on your beater drives. And use it with confidence. For Test Special will accept the responsibility of Your belting job and do that job as you want it done.

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That's because Test Special is remarkably good belting. Built with N. Y. B. & P. uniformity and quality Test Special offers you every feature you can ask of the belting you need for successful paper mill production.

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150 lb. W. S. P.

Fig. 768
Wedge Disc
200 lb. W. S. P.

Figs. 427 and 768
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Gate Valves

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Figs. 427 and 768 are made of a bronze composition developed particularly for valve service. Wall sections of extra thickness and large hexagons resist distortion. Proper seating of discs is insured by accurate alignment of moving parts.

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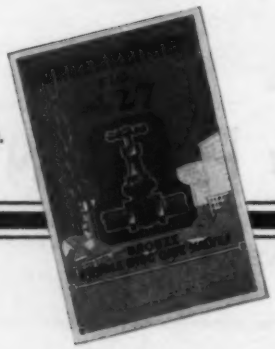

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FROM THE BOTTOM of the batting list TO "CLEANUP" POSITION

Every ballplayer hopes, by virtue of his ability to hit, to occupy fourth place in the batting order . . . "Cleanup" position.

Only a few years ago, a large paper mill bought two Warren pumps to use in a process where operating conditions were bad and the service unusually severe.

It was the kind of a job where the best equipment might give trouble . . . where only something better than anything tried before could do the job.

Following their established plant practice, complete records of operating and maintenance costs were kept, checked and compared with similar records made by previous equipment on the job.

Since that time, over two hundred more Warren pumps have been put in by the plant engineers on services in this and other mills operated by the same corporation.

Pick out your toughest pumping job . . . we are willing to start at the bottom of the batting list in your plant.

WARREN STEAM PUMP COMPANY

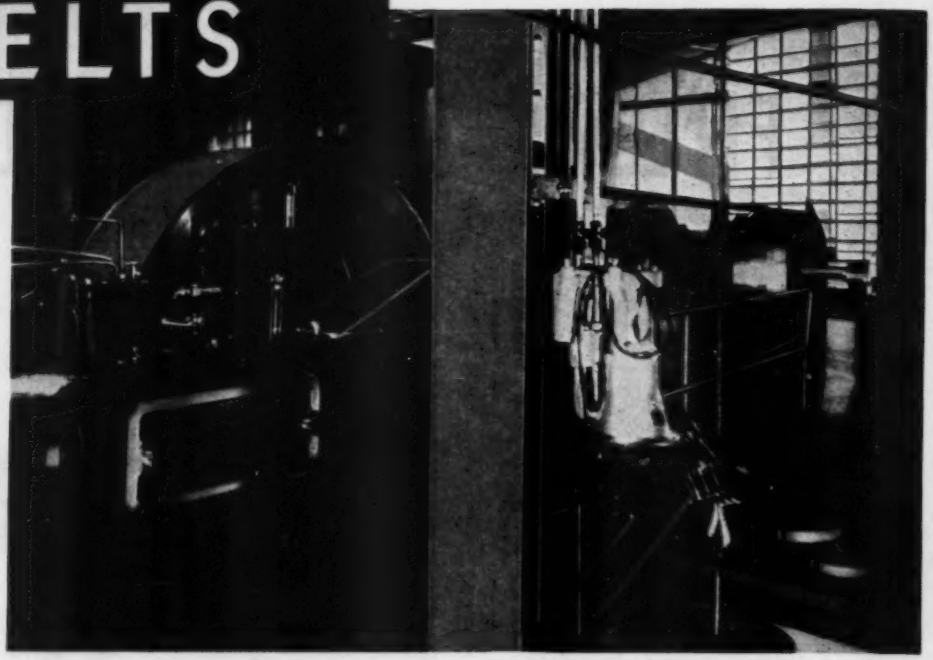
***Incorporated*—Warren, Massachusetts**

· *Agencies in all the principal cities* ·

395

CINCINNATI
TRANSMISSION
BELTS

Illustration shows a Cincinnati Belt on an engine drive at the Westvaco Paper Mill, Covington, Va. This 20" belt transmits 175 to 200 H. P.



THE West Virginia Pulp and Paper Company, one of the largest paper mills in the East, uses Cincinnati Belts extensively throughout its immense plant at Covington, Virginia. These belts vary from 20 inches wide, on large engine drives, to smaller sizes for motor and shaft hook ups.

Large mills, like Westvaco, throughout the United States, select Cincinnati Belts for drives where steady, uninterrupted performance is essential. Long service, less slippage, maximum power transmission and lower production costs are assured by the use of Cincinnati Belts.

WESTVACO
another large user

The Cincinnati Rubber Manufacturing Co.

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. . . *with these du Pont Dyestuffs*

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PONTAMINE YELLOW CH CONC.

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IN ADDITION to possessing very good fastness to alkali these du Pont Dyestuffs will produce all the current shades of yellow, buff and other colored soap wrappers.

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"Coming Events Cast Their Shadows Before"

ALL agricultural products, excepting only wheat, led by the American hog, have come up out of the slough of depression and are advancing toward the high ground of prosperity.

Sixty days ago, hogs sold as low as $3.00—ten days ago, they sold at the peak of $5.55, Chicago; cattle struck a peak of $9.75; sheep and calves followed the leaders; hides advanced sharply, presaging an indubitable advance in the price of shoes; wool has gone higher; clothing and all fabrics will go higher; textiles have felt the pulsation of new life; all dairy products, cream, butter, and cheese, are on the upturn; eggs show an advance of 100 per cent; poultry is up; in fact, the whole gamut of farm products has made and is still enjoying gratifying, fundamental, far-reaching, prosperous increased prices.

The sole exception in the agricultural list is wheat, and the only reason wheat is not selling at twenty-five to fifty cents a bushel higher is because of the deadly blight which the Farm Board, a creation of the farm politicians, has foisted upon the farmers.

But the Farm Board is doomed! Its sentence is extinction.

We make this prediction with certainty, and base it primarily upon the necessarily substantial upturn in the prices of farm products. There can be no movement for the return of prosperity in this country that does not first emanate from the soil. The continued advance of farm products affects the livelihood and prosperity of fifty per cent of the population of these United States. When so extensive a turn in fortunes and incomes of so many of the inhabitants becomes a fact, as it is today, prosperity is returning.

We are confirmed in this opinion by the readings of the trade barometers, namely, the bond and stock markets.

Now the barometer does not make the weather, but it does tell the conditions of the weather and is a reliable forecast of the same.

Just so, the bond and stock markets indicate the opinion of the investing public and forecast their action. They create no investment values.

Six weeks ago, the bond market started upward quietly, slowly but surely, and week after week, it has closed at continually higher quotations.

On July 8, the stock market averages fell to their low. That was before the adjournment of Congress. After that wealth-destroying body had adjourned sine die, the stock market returned to its normal function of registering the opinion and forecasts of investment values. For fifteen days there has been an astounding continuance and epochal upturn in values, reflecting the action of wise investors who are buying the stocks of our American industrials continuously and in greater volume.

And now it appears that the big-moneyed people in Great Britain have been buying round lots of our excessively deflated bonds and stocks before our American operators awoke to what was going on, and European gold is once more coming back home to pay for them.

A compilation of forty stocks taken at random from the New York Stock Exchange list shows an average advance of 72 per cent in those forty stocks from the day of their low quotation up to the 27th of July. Since that date and up to this writing, the bond and stock markets have continued to reflect continuous advances and expanded investments.

This showing discloses one great fact: that confidence is returning and expanding daily, and manifesting its expansion by enlarged purchases of round lots of American securities at continuously higher prices.

The results of what has happened are nothing short of miraculous and insure the return of prosperity, because with the return of confidence, all American corporations and leaders in industry who have been hesitant about expanding their corporate activities—hiring more men, releasing advertising and all of those other activities which go to build up a great prosperous commerce—are now releasing the money and men necessary to start the wheels of commerce afresh on a new era of profitable business.

There is but one sour note in the general business picture to us who are so unfortunate as to be in the paper industry.

While all other commodities are advancing their prices to those levels where operations may be profitable, this industry is cutting its prices. Just at the time when it should be among the foremost in helping the country to come back, re-employ its idle workmen, start up its curtailed mills and become a part of the general prosperous advance, leaders in the paper industry have evidently decreed that prices shall go downward, contrary to the general trend of the economic recovery of all business.

There is no warrant for such uncommercial action. It is beyond the pale of tolerance. It is too ridiculous even for discussion. This great, noble paper industry should take its place side by side with all other industrial divisions, marching shoulder to shoulder with them in the battle, to bring prosperity back to America.

The paper industry ***must*** and ***will*** become prosperous. We believe that the processes of its regeneration and rehabilitation are ***today*** in working force.

"Coming events cast their shadows before." ***Watch*** for these coming events in the paper industry.

What Do You Pay For?

IN buying a piece of equipment are you always appreciative of what you actually pay for? When the new machine arrives at the mill are you apt to examine it and say to yourself, "How do the manufacturers have the boldness to ask the price they do for it? Only a few pounds of cast iron, brass or bronze; a few bolts, nuts, and rivets, and a little labor."

If such is your thought, might it be suggested that in buying a machine, one purchases much more than the material in it and the labor involved in its production. Perhaps the machine is the result of years of research. Maybe a fortune has been spent in the working out of an idea. The Fourdrinier brothers spent about a quarter of a million dollars to make practical the idea of Robert. In so doing they gave to the papermaking industry a machine to fabricate paper continuously, but to themselves financial embarrassment.

At any rate, a shop with its necessary overhead is required to manufacture a machine. Advertising in one form or another, a personal visit by a sales engineer, or both, may be required to bring it to your attention. These items must be added to the actual cost of production in determining the selling cost. Another item that must not be overlooked is service. Although complete instructions are often furnished with a machine that requires any special knowledge for installing, it is the desire of the manufacturer that the machine give the best possible service. Such a desire prompts the manufacturer to inspect the installation as soon as possible after it is completed. Sometimes it is necessary to actually supervise the installation. In either case, it involves expense which must necessarily be borne by the customer.

Give thought to these items of expense when considering ***what you pay for*** in buying a machine.

Attend T.A.P.P.I. Convention

THE fall meeting of the Technical Association of the Pulp and Paper Industry is scheduled to be held on September 14, 15, and 16, 1932 at Holyoke, Massachusetts. Headquarters are at Hotel Nonotuck.

All members of T.A.P.P.I. and others who are interested in the activities of the association should plan to attend this convention if it is within their power to do so.

Heavy responsibilities fall upon the technical man at this time. With the machine capacity of the industry much greater than consumption, it is but reasonable to assume that the future welfare of the industry will be dependent, in part at least, upon the ability of our research workers not only to reduce the cost of production through simplified processes and better control but also for the development of new pulp and paper products for new markets. The convention presents an opportunity to the technical man to discuss these problems and others of mutual interest with his brothers in the trade, with beneficial results to the industry as a whole.

Keep the dates, September 14 to 16, open, and if there is a chance go to the convention.

DODGE WILL GIVE YOU MORE FOR YOUR MODERNIZATION DOLLAR

You can get more for your "modernization" dollar if you come to DODGE with your power drive and bearing problems. You can save by replacing your old drives with new DODGE Hypoid Gear Units. You can replace your old babbitted bearings with Dodge-Timken Units which save power and maintenance and require no adjustment or attention other than infrequent lubrication.

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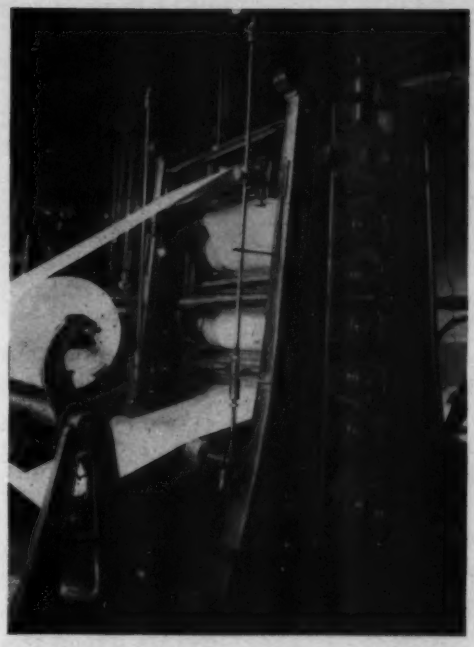
You can buy Dodge-Timken Bearings for Breast, Table, Couch, Wire, Felt, Press and Dryer Rolls as well as for Supercalenders, Jordans, Shredders, Grinders, etc., and they can be installed in your mill with labor which is available and at the time most convenient to you. All of this can be accomplished without heavy capital expenditure as you can do much of it out of your maintenance budget.

●



A Dodge-Timken Equipped Supercalender in mill of Miami Valley Coated Paper Company at Franklin, Ohio. One of twelve Supercalenders similarly equipped and operating satisfactorily in leading mills

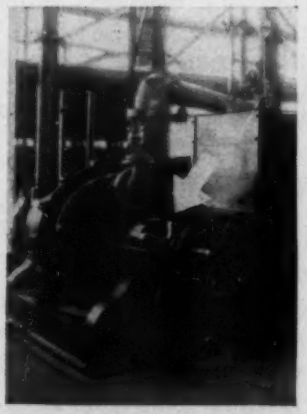
DODGE has specialized on power drives and power transmission engineering for over half a century. Many representative mills are still being driven by Dodge rope drives installed many years ago. In later years DODGE has kept pace with the demands of the industry and has designed and built unit drives, the latest development being the Dodge Hypoid Drive.

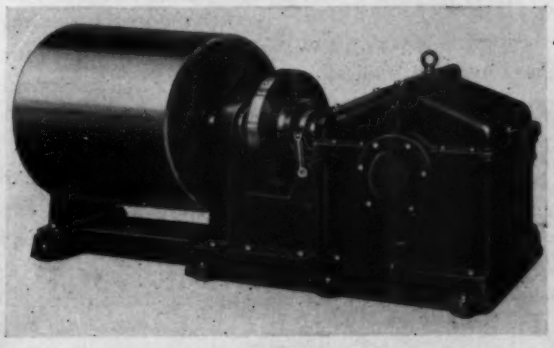
●

DODGE is the originator of the self-contained, factory-adjusted Dodge-Timken Bearing Unit, which has found wide favor in the paper industry. Over two thousand of these units are installed in one large mill and have proved their worth on every application for which they have been recommended. Why not ask DODGE to make suggestions which will save money for you?

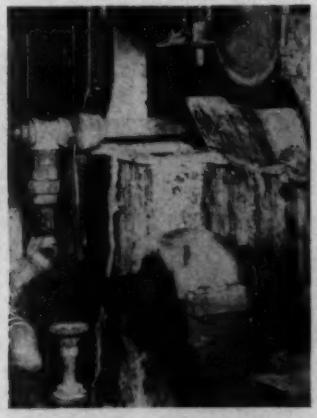
●

A Dodge-Timken Bearing Equipped Jordan





A Dodge-Timken Special Cylinder Mold Bearing



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CURRENT THOUGHT

Hard Times Continued by Soft Thinking

By WILLIAM SIBLEY

SINCE 1929, the American public has had a bad case of nerves. Fear has held sway. Nerve has become nerves. Static has replaced dynamics. Enable has become unable. Sentiment has largely supplanted analysis. Blindness has superseded vision. People who formerly made quick decisions now make jumpy decisions. While facing forward, we walk backward. Precedent, born of experience, has lost value. Do has become doubt.

All of which means that our present unhealthy business condition is almost entirely a state of mind. Regardless of how real or substantial may have been the original causes for this depression, it is being continued by soft thinking. The depression no longer exists except as we insist upon hugging it close. When we cease to think about it, it will disappear.

Believe it or not, there isn't a vestige of inflation remaining in any field of endeavor. The overexpansion of the twenties has been entirely corrected. The overlay of false enthusiasm has been scraped away to the underlying bedrock, which is America itself.

And America is solvent. Even in these times, our income is some fifty billions of dollars; our indebtedness, some fifteen billions. We have no excess population; no form of congestion. We have only forty people to the square mile, and our population is increasing at the rate of a million people annually. Both mighty favorable economic factors. The long-pull trend in American business is at the rate of over three per cent a year; has been and will continue to be. When we get those basic facts firmly in mind, and good news and constructive facts once more gain attention, our hard time will become history. And history has it that the more severe and perpendicular the drop, the sharper and more vigorous the upturn.

Depression May Benefit

As a matter of fact, it is not at all unlikely that this depression will be salutary in effect. The crazy stock-market speculation of the twenties, involving as it did some twenty or twenty-five million people, might reasonably be expected to become a potent factor for national thrift. The years of 1933 to 1940 will surely be a period of unprecedented prosperity for life insurance companies. Out of this holocaust will doubtless emerge a much needed reform in our financial structure—a benefit, when it comes, so pronounced as to make the past three years a small price to pay.

Adversity seldom inflicts permanent injury. Nearly always it is a blessing in disguise. Millions of people have run up against reduced if not total loss of income. This fact in itself means that never before in all history has the United States so teemed with ideas for making money. Everywhere people are studying products, production methods, and selling tactics in an effort to effect improvement of beneficial change. Probably two or three million men are doing that sort of thing every day, under the knowledge that the adoption of their ideas will restore their earning power. If only one per cent of those ideas prove workable, think what a tremendous force for progress this single factor will be. During the next two or three years, we shall see new products introduced, new uses for old products instituted, new production methods born and strange sales tactics started. And it is these new ideas, originated because of adversity, that will place new faces in many executive chairs. The old order will change and the new order will come as soon as we quit moping about hard times and begin to think in constructive terms.

Vision Now Prime Essential

The foregoing thought should be disturbing to that man who insists upon clinging to the old tried and true methods. The reconstruction period now commencing is fraught with pitfalls for those who lack vision, understanding and willingness to change. Transformations of deep-going effects are now under way. Everywhere viewpoints are being altered—from the farmer who now appreciates that his problem is economic instead of political, to the advertising man who realizes that the orthodox, four-color, two-page spread isn't the magic it used to be.

Too many people are believing and saying that America is hopelessly mired in a swamp of economic ills. Such a belief is totally unjustified, both by current facts and past history. We have had panics before, and every one of them has become interesting, instructive history. This one will also become history. Because this one didn't end while many of us were still hoping for a return to 1929 prices and wages, we have turned away from the clearly visible encouragements and looked only at our difficulties. This has resulted in a paralysis of effort, the which will continue so long as we look in the wrong direction. No one is beaten until he succumbs. Those who succumb to discouragement are weak. What we do in spite of circumstances, rather than because of them, is the measure of our stamina and ability.

Approved!

By American Coating and Paper Mills
AN AMERICAN COATING CLAY
American Made for American Trade

H·T· BRAND

COATING CLAY ~
HIGHEST GRADE FILLING CLAY

The Clay of Uniformity

SUPERIOR advantages: Higher Finish (due to fineness of individual particles ... glarimeter shows on equal calendering four to six points advantage over imported coating clays) »» Requires less adhesives»» Gives greater uniformity of texture »» Purest and cleanest clay produced »» Low moisture content »» Better covering qualities, resulting in superior printability »» Greater opacity.

- Edgar Clays are the result of 50 years' experience in washing clay.

Samples and information mailed on request.

- Also producers of Klondyke Brand Filler Clays.
- Our D. R. G. FILLER CLAY to be used whenever air-conditioned clays are required.
- Technical Service available both for coating and loading without charge.
- Let our service man demonstrate and prove these points to you.

EDGAR BROTHERS COMPANY
Hudson Terminal Bldg., 50 Church Street, New York City

Uniform quality pulp--
continuous operation--
less waste--by the tried
and true NORTON PULPSTONE

NORTON COMPANY, WORCESTER, MASS.—Grinding and Lapping Machines • Grinding Wheels; Abrasives; Pulpstones; India Oilstones • Laboratory Ware; Refractories; Porous Plates • Non-slip Tiles, Treads and Aggregates

NORTON PULPSTONE

ONE PUMP SELLS 64 MORE!

GOULDS ASSURED the Brown Paper Mill Company, Inc., Monroe, La., that Goulds Paper Stock Pumps would offer 3 distinct advantages: (1) absence of air-binding, (2) freedom from clogging and (3) efficient use of power.

One stock pump was installed on trial service. Its performance brought Goulds orders for 53 other pumps... not only stock pumps, but service pumps as well. Since then Goulds has furnished more pumps from time to time. Today the total installation numbers 65 pumps!

Goulds Research created the stock pump. Goulds engineers studied stock-pumping problems in paper mills . . . determined trouble-sources . . . corrected them. For instance, air-binding was eliminated by making the pump discharge horizontal and placing it at the top of the casing. Clogging was wiped out by a two-vane impeller, especially designed to provide positive, even flow of stock and to prevent water-separation, the common cause of clogging. It followed naturally, that power consumption was cut way down.

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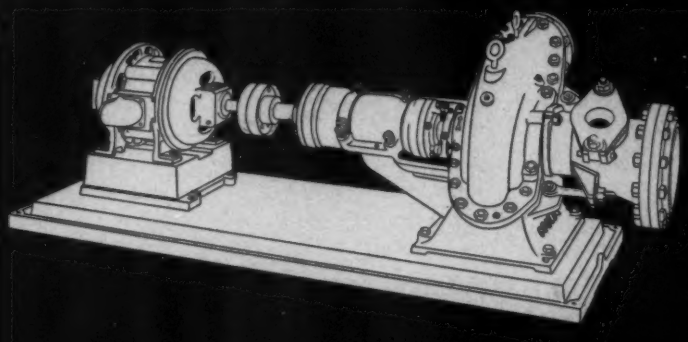

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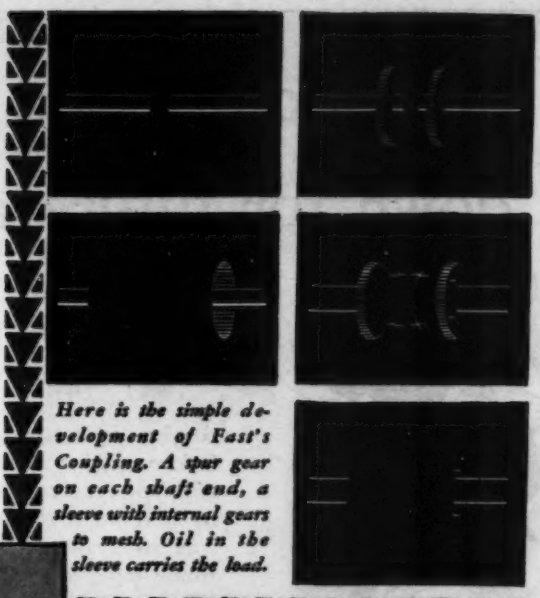
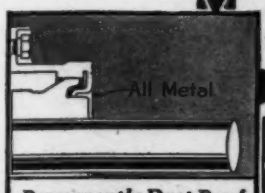


Here is the simple development of Fast's Coupling. A spur gear on each shaft end, a sleeve with internal gears to mesh. Oil in the sleeve carries the load.



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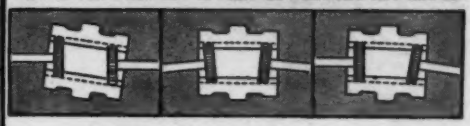

The exaggerated diagrams above show how all forms of misalignment are compensated for between the lubricated faces of the gear teeth. Note how the entire assembly rotates as a unit.

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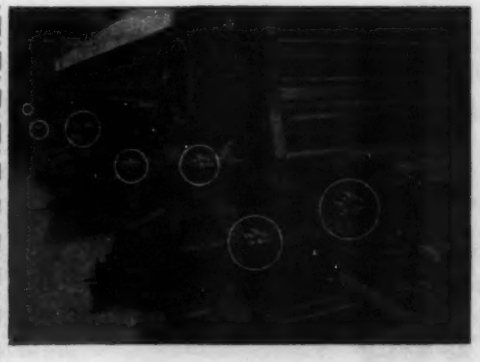

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THE PAPER INDUSTRY

A MONTHLY EDUCATIONAL JOURNAL

The Value of Boiler Tests in Industrial Plants

Co-ordination of superintendent and engineer essential to efficient results in power economy.

By ROBERT C. DENNY

THAT boiler tests are a waste of time and money, is the candid opinion of many plant superintendents. Their conclusion is based on experience. They have stood for the expense, and often the inconvenience, of high-brow measurements and readings in their boiler plants many a time, but seldom have they observed subsequent decreases in their power costs.

"Where's the percentage?" they protest.

To which the engineers give vague and generalized answers about knowing the evaporation, or checking up on the efficiency, or measuring the capacity; not very convincing to the man who is responsible for the plant profit.

Even when equipment has been purchased and acceptance tests are run, the plant superintendent is apt to look at the exercises as a sort of Decoration Day parade, and feel glad when they are finished. Does his equipment tune up to the test efficiencies after the manufacturer's crew has done its testing and trekked on? Almost never.

There is a serious gap between regular operation, as the superintendent gets the monthly or yearly summarizing figures, and the yearnings of his engineers or the advice he has been handed by consulting, contracting, or manufacturing engineers. In few cases is a superintendent lucky enough to cash in on the technically-expressed and roseate story that the engineers handed him when they had the floor. And the sorrowful fact is, that often the superintendent does not know how to make these glad promises of economy even begin to blossom into daily, monthly, and yearly fact that the accounting department will register with dollar signs.

Boiler testing can be a very great help in accomplishing plant economy and savings. Several matters of manufacturing plant operation have a marked effect on the annual coal bill, and these can be demonstrated by boiler testing.

The use of steam for process work can be timed so as to save coal, or it can be allowed to bunch up by unwise synchronizing so as to consume an appalling amount of fuel, which is very often the actual case. Some rather simple fuel measurements, which can be properly included as boiler testing, will find the economical answer to that condition.

Every steam boiler has a certain range of capacity at which the proportion of fuel to steam is lower than at either a lower or higher capacity. The increase in fuel cost for a unit quantity of steam can be much higher than is commonly suspected, in these uneconomical ranges. Again, the job of checking up methodically and accurately on such capacities and such economies is boiler testing.

The kind of fuel, especially if it be bituminous coal, has a decided effect on all the other economy factors of boiler operation. It will be found that different grades of fuel cause a change in the economical steaming range of a boiler. Testing will determine how much, and often why.

But it is not enough for the superintendent to authorize or permit such investigations as these. If he would reap any real harvests of economy, he must become and remain interested in the processes of increasing economy. His subordinates will measure more accurately, and seek for losses more diligently, if they have some practical assurance that executive action will follow the laborious work they have to do as ground work.

Resistance to change in manufacturing operations in order to save fuel, is usually more than plant engineers can surmount. It takes the authority of the superintendent to put such changes across. He, in turn, is not so apt to insist on a modification in manufacturing

operation if he merely listens to the engineer's story as a judge. He must become a partisan to economy, and his engineer must be his aide, not merely a petitioner.

The technical side of all this work is boiler testing. Not the delicate and somewhat high-brow work of checking up all the symptoms and vagaries of the boiler unit, but the rougher measurements of fuel consumption and steam production.

Losses of fuel due to radiation from uncovered steam and hot water pipe lines, due to steam and hot water leaks throughout the plant, due to buried, untraced, and sometimes unknown piping, and due to the use of live steam when exhaust or low pressure steam is available, will be spotted and drop into the economy net when the superintendent becomes partisan. Engineers, whether in greasy overalls or in white collars, wilt under neglect of supervision, and become alert under encouragement, like the rest of humanity. In all cases, the nature of their work requires active co-operation from those higher up, in order to return the dividends they are capable of producing.

The field thus discussed is outside of the boiler plant itself; it is throughout the rest of the plant. It has been purposely taken up first because co-operation between superintendent and engineer in this field will yield results that will be rather quickly and obviously noted. These results should establish a mutual confidence that is an absolutely necessary factor in carrying through the more technical job of saving fuel within the boiler plant.

No routine method of boiler plant operation can be laid down for all plants. Besides, going at the job from a paper and pencil standpoint is the surest way of not arriving any place. The expenses of operation constitute the objective. Coal and labor are the larger items, with repairs and general supplies in second place. The problem is to reduce the sum of them all, and still make as much steam as the manufacturing plant requires. And the job will be solved best by the engineer who studies each phase of operation in the boiler plant at first hand, tries one method or another, continually and patiently, and is adequately backed up by the authority of his superintendent when definite action has to be taken.

Records and data can be collected in any old notebook and from these will gradually evolve an organized system of daily records that will be chock-full of meaning to both engineer and superintendent. To map out a recording system first, is quite apt to center too much attention on paper and pencil and not enough on coal and steam.

As the engineer studies his boiler plant operation, he will progressively feel the need of an orsat, draft gauges, flow meters, and the like. His requirements, after confidence has been established between his superintendent and himself, are quite likely to be recognized and met, and his problems will be appreciated. Sooner or later, he will arrive at the conviction that definite information, which continually eludes him, can be obtained only by a regular boiler test.

The boiler test made under such conditions will be the grand exception to the general run of such tests. It will be made to discover how economies can be secured or increased. It will be made to eliminate guessing and establish a true basis for the unpreventable losses incident to the set-up of his particular plant. It will be made to demonstrate the practicability of economy by one kind of firing compared with another. And, finally, it will be made to prove beyond question to both superintendent and engineer, whether investment in other equipment is advisable or not.

No boiler test in the average plant is worth very much unless the firing technique is practical for ordinary operating conditions. This technique may be more delicate than the daily average, and usually is. The boiler operators should by all means take an active part in the proceedings and learn the practical tricks of delicate handling. But to have an expert come in and handle the unit solely with a view of extraordinarily high efficiency, is to discredit the business of boiler testing. If the expert is also a good teacher, and will take time and patience to impart his skill to the operators, much good can be accomplished toward permanently increased economy in operation.

High boiler efficiency is compounded partly of clean boilers, tight baffles, good setting, good fuel, and proper load, and partly of skill in operation. Manufacturers who continually have guarantee efficiencies to demonstrate by boiler tests, make sure of the physical conditions and assign a skilled operator to handle the unit during the test period. The efficiency thus secured cannot usually be equalled in daily operation, because tubes gradually become dirty, the load is not constant, fuel changes from time to time, and the regular fireman has not been trained to the high degree of skill possessed by the expert. The mark set up by such a test is therefore too high for the plant operators to shoot at day in and day out. The handicaps under which daily operation is maintained account for perhaps five to ten per cent of this high-test efficiency.

It is well for the superintendent or other buyer of steam generating equipment to bear this handicap matter in mind. The manufacturer's statement of efficiency is likely to be quite true, and attainable under test conditions. He who buys will do well to figure his operating costs on a somewhat lower level, and not suffer the disappointment of those who imagine their operation will always be on a test basis.

The value of boiler testing lies in the feeling of necessity that precedes it. When this feeling has been growing gradually, and the need for precise information is keenly felt, the results may be expected to serve the definite and useful purpose of increasing operating economy. On this foundation of necessity, and with a mutual understanding between superintendent and engineer, the superintendent will no longer grumble; "Where's the percentage?" He is far more likely to enthuse with, "Good stuff, let's go!"

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◆ THE FIRST NEWSPAPER in what is now the United States, was published in April, 1704, by John Campbell, postmaster of Boston. The paper was called the Boston News-Letter and was printed on two pages of handmade paper, each 9x12 inches. It carried news of London, apparently the latest available, of the previous December. Nearly 70 years had elapsed between the setting up of the first printing press and the publication of the first newspaper. The first press was set up in 1638 in Cambridge, Mass.

Digester Cooking Systems

A practical discussion of direct and indirect cooking systems for soda and sulphate digesters.

By ALBERT B. GREGG

THERE are two types of digesters commonly used for soda and sulphate pulping, namely, the tumbling and the stationary vertical. Such digesters are made of steel plate and are of either riveted or welded construction. The capacity of a tumbling digester usually is from two to three tons of air-dry pulp per charge, while a stationary digester capacity varies from three to seven tons.

Direct Cooking Systems

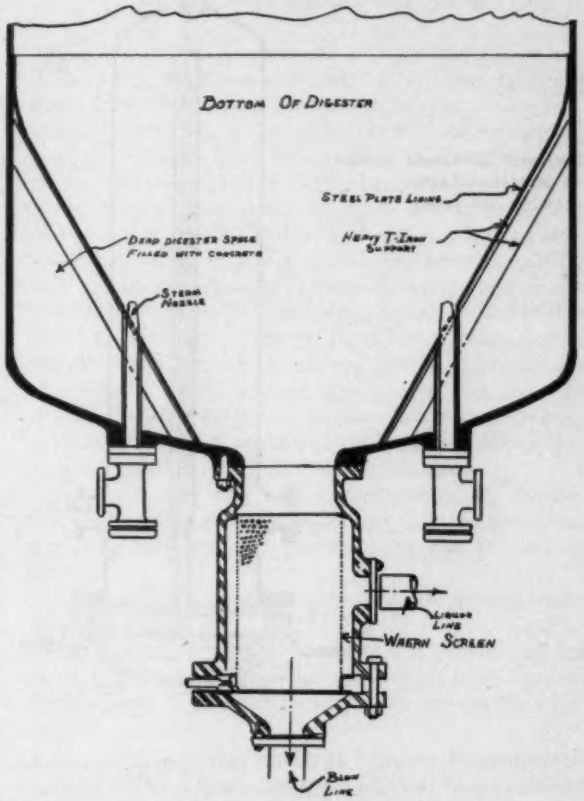
Steam is introduced into a tumbling digester through a pipe which rests within one of the digester trunnions and extends along the inside of the digester to a perforated ring pipe at the top, while in a stationary digester it may be introduced in one of several ways. In some cases, it enters from the blow line above the blow valve. In others, a perforated ring pipe at the bottom is connected to the steam main by a pipe extending down from the top. A third method includes the use of two to four nozzles located at the bottom on a line concentric with the digester shell and approximately halfway from the center line to the shell. In both stationary and tumbling digesters a relief line is placed at the top for relieving cold gases.

Very little relieving is required in the case of a tumbling digester. Practice varies with the individual mill. Some mills revolve a digester until the desired steam pressure is reached. Then the digester is stopped with the ring pipe end at the bottom, the steam valve left open, the relief closed, and the digester held in this position until just prior to the blow. As soon as tests indicate that the pulping operation has continued to the desired point, the digester is turned end for end, the blow line connected to the plug cock at the bottom, and the pulp blown to a diffuser or other receptacle for washing. Other mills revolve the digester continuously throughout the duration of a cook or at intervals.

With the tumbling digester, the mixing of the chips and liquor is positive owing to the tumbling action of the digester. The tumbling action eliminates the necessity of any extensive relieving, thus reducing steam consumption and the dilution of liquor by condensate. At the same time, it permits the production of a nearly uniform pulp and maintains screening losses at a minimum.

The circulation of liquor through the chips in a stationary digester is dependent upon relief from the top. As the pressure within the digester increases, the rate of circulation decreases owing to the decrease in the velocity of the steam. The flow of liquor and gases upward through the digester tends to float the chips with a consequent increase in screening losses.

Steam syphons, or injectors, have been used by some mills, principally soda mills, to overcome the tendency of the chips to float and to afford a more nearly positive circulation of the liquor through the chips. This practice has been found to be more or less unsatisfactory because as the pressure increases within the digester,



Stationary digester showing solid false bottom, outside liquor screen and steam nozzles

the rate of circulation decreases. The rate of circulation is dependent upon a steam flow which, in turn, is dependent upon a relief. Trouble has also been experienced through the tendency of the intake screen to plug with stock.

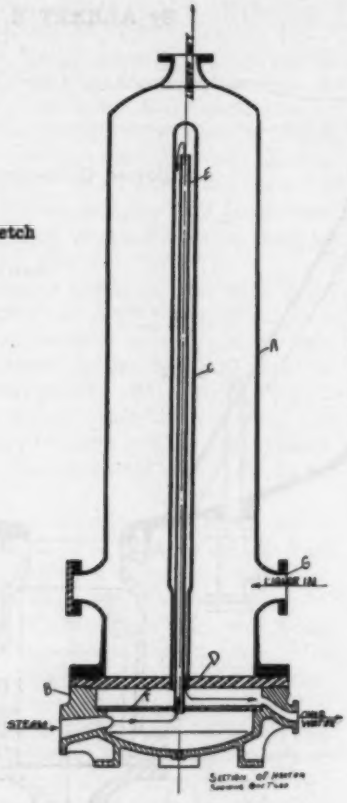
In direct cooking, a stationary digester requires more steam per ton of pulp than does the tumbling digester because of the necessity for more relief for circulation. At the same time, the density of the black liquor from a tumbling digester will be higher than from a stationary digester because of the lesser quantity of condensate.

It seems that the ideal set-up would combine the desirable features of both the tumbling and the vertical digesters and eliminate the undesirable ones. It would combine such stationary digester features as large units, smaller digester house, fewer diffusers and easier operation with the positive circulation of the tumbling digester with its reduced steam requirements, lesser liquor

dilution, decreased screening losses and higher quality of pulp.

Indirect Cooking Systems

To this end, several attempts have been made to heat the digester cooking liquor without the addition of the condensate from steam. The first practical development along this line was introduced in Norway in 1911, and on this continent in 1916 as the Morterud System of Indirect Cooking. In brief, this system included a circulation of the cooking liquor outside of the digester, passing it through a heating unit and reintroducing it into the top of the digester.



Sectional elevation sketch of Morterud heater showing one tube

The shells of the first heaters were riveted and had a tendency to develop leaks, while the life of the original tubes was short. These problems have been overcome in the design of more modern heaters.

The heating unit of a modern Morterud system consists of a cylindrical, hammer-welded, steel shell (A) flanged at the bottom and bolted to lower base casting (B), a set of Swedish charcoal steel tubes (C) closed at the top and expanded into a tube sheet (D) of rolled steel, and a set of smaller steel tubes (E) open at both ends and expanded into a tube sheet at the bottom and extending up into the outer tubes nearly to the top.

In operation, steam enters the lower base casting, flows upward through the inner tubes to the top of the outer tubes, where it condenses and flows downward to the space between the two tube sheets where it is relieved by suitable steam traps or condensate pumps.

The liquor from the base of the digester enters a nozzle (G) hammer-welded to the shell near the bottom and is forced upward through the heater around the tubes. The heat from the condensate is transferred to the liquor through the tubes without actual contact of liquor and steam or condensate.

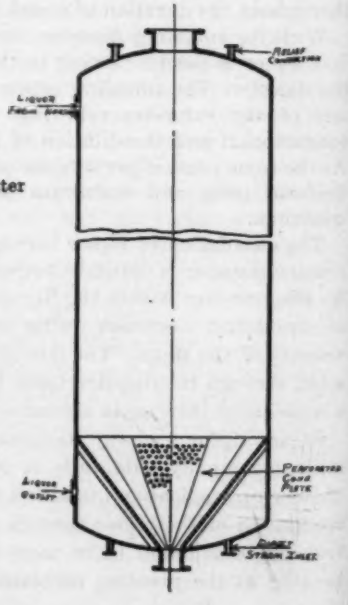
Other types of heaters have been developed which also appear to be satisfactory. One heater, in use in at least two of the representative southern mills, consists of a vertical, cylindrical steel housing and two concentric pipe coils which connect to single lines at each end through Y's. A suitable steam inlet is situated at the side of the housing, and a condensate outlet is located in the bottom. The liquor is pumped through the coils and the steam introduced into the shell around the coils.

Recently, another type of heater has been developed on the Scandinavian Peninsula, the Albe Nielsen Heater and Evaporator. This unit consists of a vertical, cylindrical steel shell, two sets of return bend-type stainless steel coils and a separator arrangement at the top of the housing which allows the relieving of liquor-free gases for subsequent use in evaporation.

Claims for this heater are that the liquor from the digester operated with it is discharged at a density of 24 deg. Bé. because of the evaporation of the water vapor continuously throughout the cook. In effect, this heater is both a liquor heater and a concentrator. Provision is made for the recovery of turpentine from the gases and the use of the hot gases for heating liquor of subsequent cooks.

A digester operated with an indirect system is equipped with a screen at the bottom either inside or outside through which the liquor drains to a specially designed pump which forces it through the heating unit to the top of the digester where it is distributed evenly over the chips by means of a suitable liquor spreading arrangement. The pump, which has a water-cooled shaft, is estimated to circulate the entire liquor charge in from ten to twenty minutes.

After charging the digester, the circulating pump is started. Sometimes it even may be desirable to run the pump while the digester is being filled. This practice



Vertical sulphate digester showing perforated false bottom

acts as a digester filler and allows the addition of from ten to thirteen per cent of chips, thereby increasing the yield from the digester and increasing the capacity of the digester room.

It is customary to relieve the cold gases at the beginning of the cook and after the digester has reached a pressure of from twenty to twenty-five pounds. Very little other relief is necessary from this point throughout the cook, although some mills practice relieving at intervals with the introduction of direct steam at the bottom for the purpose of lifting the chips which may have become packed by the draining of the liquor through them. This practice is termed shaking up, and in all cases it is desirable to perform it immediately preceding a blow to eliminate the possibility of dirty blows.

Where the bottom of the digester is dish-shaped, it is customary to install a conical false bottom to assist in blowing cleanly. Parts of the false bottom should be welded rather than bolted to eliminate possibility of bolts and screen parts from falling into the blow hole at the bottom of the digester. Several types of false bottoms, each more or less particularly adapted to the conditions of the individual mills, are in use. The perforated cone forming a sixty-degree angle apparently is producing the best results.

The use of the indirect system has resulted in a decrease in steam consumption, decrease in alkali charge, decrease in screening losses, increase in pulp quality and increase in black liquor density.

It is customary in soda mills to use only white liquor for cooking because of the tendency of the black liquor to discolor the pulp and consequently increase the required bleach consumption. In such cases, the indirect system has produced pulp with a steam consumption of three thousand pounds or less per ton. In cases where the black liquor is omitted at the start, it is pumped into the digester either immediately prior to or during the blow, to assist in blowing clean.

It is obvious that when the condensate is eliminated from the digester, the resultant black liquor will be of a higher density than black liquor from a direct cook with the condensation taking place within the digester. Actual operating reports show that liquor from direct cooks has a density of 12 deg. Bé. at 60 deg. Fahr., while the liquor from indirect cooks has a density of 15.5 deg. at the same temperature. The 12-deg. liquor contains 55 lb. of water per cubic foot; the 15.5-degree liquor contains 52.5 lb. of water per cubic foot.

Analysis of the washing conditions showed that the same amount of water was used for washing each type of pulp. Approximately five pounds of water per pound of pulp was used regardless of whether the pulp was from an indirect or a direct cook. One mill analysis showed that this difference of 2.5 pounds of water per cubic foot accounted for a saving in steam for evaporation alone of 1,500 lb. per ton of pulp.

Moreover, when a charge is cooked by the indirect method alone without the use of any direct steam, the strength of the pulp is increased. Turpentine sometimes recovered from the relief gases is of a clearer nature than when the direct system of cooking is employed.

The popularity of indirect heating of alkaline digesters is increasing as indicated by the number of installations in the United States and Canada, as well as on the Scandinavian Pensinsula. It is but reasonable to expect that within a relatively short period practically every alkaline pulp mill in the world will be cooking indirectly.

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Conditioning of Oil Soaked Belting

By W. F. SCHAPHORST, M. E.

ALTHOUGH oil does not damage some belts seriously, an excessive amount of oil does cause slipping. As soon as slip occurs, there is an unnecessary power loss which is directly proportional to the slip. For instance, if the slip amounts to 2 per cent, the power loss is 2 per cent. If the slip is 5 per cent, the power loss is 5 per cent. In other words, percentage of power loss is identical with the percentage of slip.

Continued use of a leather belt soaked in mineral oil will develop cracks from fiber abrasion inside. The natural animal oil in high-grade leather protects these fibers against sawing one on the other. Harsh mineral oil removes this film of natural animal lubricant and allows the fibers to contact and develop abrasion. Degreasing will remove the mineral oil and re-dressing with animal oil will replace the film on each fiber, which means pliability without internal damage.

Excessive slip may also cause burning of the belt. Burning is often much more serious than the power loss, cracking, and abrasion combined; it can be very expensive.

There are two ways in which to tackle this oil soaked belting problem:

(1)—Improve your oil conditions, if possible, so that there will be no leakage or splattering onto the belt. By so doing, it will not be necessary to give the belt a periodic cleaning.

(2)—Use a belt that is as immune as possible to being harmed by oil and then clean that belt periodically.

Any of the numerous cleaning agents may be used for washing leather belts, such as gasoline, naphtha, kerosene, benzol, carbon tetrachloride, aqua ammonia, alcohol, soda and water.

When using gasoline or naphtha, be extremely careful. According to the U. S. Bureau of Mines, if gasoline is stored in an open place, as in a pail, the room in which the pail is left will soon be filled with an easily explosible mixture. The limits of explosibility are between 1.5 per cent and 6 per cent of gasoline vapor in air. In other words, only a little gasoline vapor is needed to render air explosive—one and one-half cubic feet of gasoline vapor for each 97½ feet of air. One gallon of gasoline can, when perfectly mixed, render 2,100 cubic feet of air explosive.

Some types of pulleys also collect oil and become oil soaked. An oil soaked belt on oil soaked pulleys is a very poor combination for power transmission. Pulleys can be de-greased as well as belts by a process very similar to that described above.

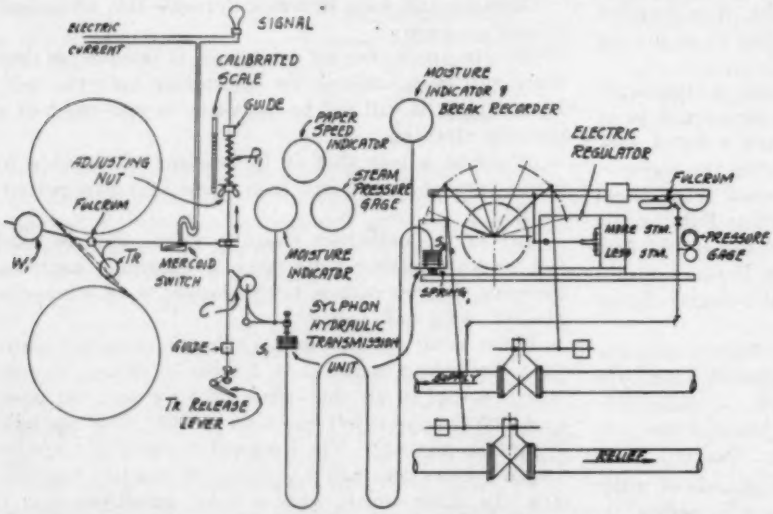
The Control of Steam in Paper Drying

By W. J. O'BRIEN

THE need of steam control in paper drying is recognized and admitted by all papermakers. In one mill under observation, a one per cent variation from approved standard of moisture content on a small machine producing a 90-inch sheet of ten-pound tissue at 350 feet per minute, would amount to approximately $10 per day, or $3,000 per year, which indicates the savings to be effected through proper control. In a larger, faster running board mill, with the same amount of variation, savings would amount to $25 per day or $7,500 per year. In a third mill, production varied recently from zero to 15 per cent moisture content. This, of course, was an extreme condition which required immediate improvement.

A good control mechanism for supplying the steam to paper machine dryers should be of simple, sturdy and dependable construction. It should also be extremely sensitive and impart a minimum strain upon the paper being dried. Obviously, such a mechanism should permit convenient, accurate adjustment.

The accompanying sketch illustrates the O'Brien system of steam control for paper machines. The mechanism is shown as a chromium-plated tension roll (TR) fitted with ball bearings and counterbalanced by (W_1) to eliminate all but spring tension resistance (R_1). This resistance is adjustable to any desired moisture content of the finished paper. When the paper in process of drying has an excess of moisture content, more heat is naturally required to dry it. A beveled cam (C) compresses the Sylphon hydraulic transmission unit (S_1) of the system, extending (S_2), which lowers the regulator beam and operates the steam supply regulator to make more steam contact. The regulator is electrically actuated and uses a 1/25-hp. series wound motor through a 19,000 to 1 gear reduction and is compensated by the Sylphon transmission, the oil-filled dashpot and the light balancing spring to prevent hunting, a characteristic common to extremely sensitive regulators.



Mounted on the cam lever is a mercoid switch. This switch, when the sheet breaks, closes an electric circuit to signal the paper machine operator by light or bell and records the time, duration and number of breaks. When a break has been remedied, the controller is automatically set back in normal operation without attention.

Of vital importance to the operator, superintendent and manager are the indicators and recorders of the essential factors of moisture content or tension, steam pressure and rate of speed, so that any variation can be quickly detected, cause determined and corrective steps to be taken promptly to avoid loss and assure consistent standard quality at minimum operating cost. This arrangement is designed to be operated either by direct paper tension or service steam pressure to the dryers.

Best results will be obtained with this system of control when (1) the air and condensate are promptly eliminated from the paper machine dryers (2) uniform heat distribution is arranged for the dryers, and (3) the ventilating system absorbs adequately the moisture in the atmosphere as it is driven off the drying cylinders.

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◆ To Protect Rubber Belting Against Deterioration

Many paper mills will undoubtedly be interested in suggestions recently given out by The B. F. Goodrich Co., Akron, Ohio, for the protection of rubber belting from deterioration. This advice will prove most helpful during the present period when many plants are either wholly or partly shut down, and will aid economical operating costs when the plants are re-opened.

Belts should be stored in a dark, cool (not over 70 deg. Fahr) place which is maintained under humidity conditions which are not too dry. This does not mean belts should be stored with one end standing wet, but the air of the warehouse should not be too dry. Direct sunlight and warm air should be avoided wherever possible.

To further protect belting in storage, the following preparation is recommended by the Goodrich Company to be used to treat the edges and exposed face of belts in roll form: one quart shellac, one pint alcohol, one and one-half quarts household ammonia and three quarts water. This solution can be quickly applied with a whitewash brush, and a gallon should cover about 300 sq. ft. It can be purchased already mixed, combined with age-resisting chemicals.

◆ Laboratory for Demonstration of Rod Mill

The Mine and Smelter Supply Co. has developed a laboratory at its headquarters in Denver, Colo., where the performance of its Marcy Rod Mill in the treating of papermaking fibers will be demonstrated.

The laboratory has a floor space of 22 ft. by 36 ft. and the equipment includes several different sizes of experimental rod mills, hydration chests, jordan, and a combination paper machine which trims 12 inches. In addition to this special processing equipment, is such general testing apparatus as is necessary for such a laboratory.

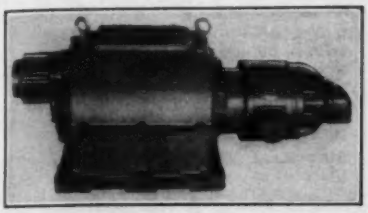
Among the fibrous materials that have been processed in the laboratory are kraft pulp, groundwood pulp, flax, rag furnish, and straw stock. From the results of such runs, recommendations and suggestions regarding the performance of Marcy Rod Mills under a given set of conditions can be accurately made.

The laboratory is in charge of W. L. Campbell, who has had a number of years of practical mill operating experience.

◆ A Motorized Speed Reducer

A new motorized speed reducer has recently been added to the line of enclosed speed reducing units built by Link-Belt Company, Philadelphia. The reducer here illustrated is a triple reduction unit with a speed ratio of 312.2 to 1. The motor shaft (which extends into the reducer housing) operates at 1165 r. p. m., and the low speed shaft at only 3.75 r. p. m.

Roller bearings and continuous-tooth herringbone gears are used. The gears



run in oil, thus providing automatic lubrication of the gears and bearings.

The advantages of using a motor with extended shaft, and mounting it in this manner, are the increased efficiency and compactness reducing the floor space required, and elimination of high-speed motor-shaft coupling.

◆ Boiler Water Testing Equipment

W. A. Taylor and Co., Inc., 872 Linden Ave., Baltimore, Md., has recently developed and placed on the market two new outfits for controlling the pH and

phosphate content of boiler water. Both outfits are similar in design and operation to the slide comparator shown in the illustration. They can be secured as separate units or in combination.

All color standards used in these sets, as well as those employed in all other Taylor equipment, are guaranteed to retain their accuracy for a period of five years. Complete details will gladly be given by the manufacturer.

◆ Reliance Constant-Tension Regulator

A constant-tension regulator has been developed by the Reliance Electric & Engineering Co., Cleveland, Ohio, manufacturer of alternating and direct-current motors. This regulator is for use with devices such as winders for paper and for other applications where it is necessary to have the material wound or pulled at a constant tension.

For any speed at which the material is being wound or treated, the regulator will keep the pulling tension constant. This apparatus eliminates the need for the slipping clutch for obtaining constant tension. It is easily adjusted, and when once set does not change.

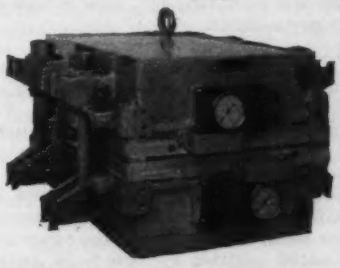
The regulator is very sturdy in construction and liberal in electrical design. Ball bearings are provided. The rheostat used is especially built for this work.

Reliance Constant-tension Regulators may be furnished in various sizes for the many classes of work to which they are adaptable. They are fully patented.

◆ Portable Vulcanizer for Rubber Belts

Rubber belting is extensively used as a means of transmitting power in pulp and paper mills and also for belt conveyor installations. Most of these belts, without question, are not made endless. In the mills some of them are joined by belt lacing, belt hooks, or by step splicing.

A recent equipment development makes it possible to vulcanize a rubber

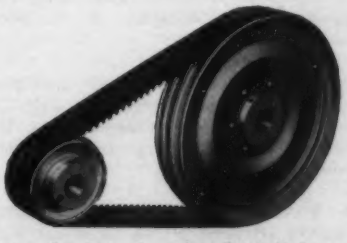


belt joint or to repair such a belt by vulcanization. These belt vulcanizers are designed and manufactured in various sizes to handle belts up to sixty inches in width. In making a belt joint, the belt ends are first stepped down and skived as in making the ordinary splice and the ends cemented. The ends are then brought together and placed in the vulcanizer and the final result is a splice which in appearance and operation is said to be like the remainder of the belt.

For complete information on this line of vulcanizers write James C. Heintz & Co., 3740 West 143rd Street, Cleveland, Ohio.

◆ New Line of V-Pulleys

The Dayton Rubber Manufacturing Co., of Dayton, Ohio, maker of Dayton Cog-Belt Drives, announces a new line



of Day-Steel single and multiple V-Groove Pulleys for use with Dayton Cog-Belts, for ratings of 7½ hp. and below. These pulleys are accurately formed from heavy gauge pressed steel for maximum strength, strongly welded both at the rim and at the web, and rigidly assembled with a hub of unique construction to give an accurately balanced and true running pulley of exceptional ruggedness and pleasing proportions. A high quality aluminum finish adds much to the appearance of the product. Complete engineering and price data are given in bulletin No. 110 which will be furnished on request.

◆ Self-Inking Roller Brander

A new type of stenciling outfit of novel design is being manufactured by the Everhot Manufacturing Co., 607-693 S. Tenth Ave., Maywood, Ill. The brand is rolled along, producing a continuous

stencil from a few inches to hundreds of feet long, as desired. A unique feature of the device is the heating or ink drying element, which is optional, and which enables the operator to stencil damp, greasy or oily surfaces. The size and capacity of the heating element can be varied as desired, according to the surface being stenciled. Designs and trade-marks as well as any kind of lettering can be worked out on the cylindrical branding stencil, and used for advertising or identification purposes.

◆ The Apmew Hydrator

One of the recent additions to the line of equipment designed and manufactured by the American Paper Machinery and Engineering Works, Inc., of Glens Falls, New York, for use in pulp and paper mills is the Apmew Hydrator.

The hydrator, designed to treat stock continuously, consists of a horizontal, cylindrical casing with a special inlet opening at one end and three discharge openings along the top side of the casing, and a series of internal raceways guiding six sets of balls, taper rollers, or cylindrical rollers.

The shaft supporting the raceways is designed to permit slight endwise adjustment of the raceways, the inner raceways being securely keyed to shaft. The shaft may be driven through a pulley or may be directly connected to a motor.

An impeller fastened to the shaft at the inlet end of the machine within the casing forces the stock during operation through the various sets of hydrating balls or rollers and to discharge. The three discharge valves permits the stock

to be released at any of these points depending upon the desired degree of hydration.

Complete information concerning the hydrator may be obtained upon request to the manufacturer.

◆ Single Line Multifeed System

The Hills-McCanna Company has developed a system for the mechanical application of light greases and heavy oils to points requiring regular lubrication. This system completes its line of equipment for lubricating any type of machinery that requires regular amounts of oils and greases.

It is a single line system. The main unit is placed in a convenient location and a single feeder line taken to the farthest point requiring lubrication. Branch lines are then taken from the main line to each bearing. No return line is required. An independent mechanical measuring unit is placed at each bearing.

The manufacturer's aim has been to provide a system that is accurate, positive, rugged and with no complicated parts to get out of order.

Literature is available. Address the manufacturer, Hills-McCanna Co., 2349 Nelson Street, Chicago.

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◆ Note on Sampling of Shredded Pulp

A large Western pulp mill which produces shredded pulp and has been using the Crossley sampling tool finds that for their product the tool acts better if the cutting edge has its bevel on the outside. The tool as now made has a chisel edge with the bevel on the inside, it being found to act better in this shape with sheeted pulp.

The Thompson Manufacturing Co., Lancaster, N. H., which makes this tool advises the Joint Committee on Approved Pulp Testing Chemists that they will be pleased to put either type of edge on the tool when it is ordered and there will not be any extra charge.

◆ To Discuss Wood Pulp Specifications

A feature of the fall meeting of the Technical Association of the Pulp and Paper Industry to be held at Holyoke, Mass., September 14 to 16 will be a symposium on wood pulp classification and specification. So important is this subject that the entire program of one of the sessions will be devoted to it. Preparations for the meeting are being arranged by Dr. John L. Parsons of the Hammermill Paper Company and general chairman of the T. A. P. P. I. Raw Materials Division.

The conference will cover the following subjects: Pulp Classifications, Pulp Use Requirements, Present Ability to Specify Based on Existing Methods of Evaluation, Color Measurements of Pulps. Members of the association who have had extensive experience and who are especially fitted in these subjects will lead the discussion.

The association is at present circulating an inquiry to ascertain the extent to which individual paper companies are specifying and testing pulp.

Because of the large attendance anticipated at the meeting, room reservations should at once be made at the Nonotuck Hotel, Holyoke. Certificates should be obtained from the ticket agents when railroad tickets are purchased to benefit by the fare and one-half arrangement that has been made by the local committee.

◆ THREE YEARS AGO when new interests changed the capital structure and the name of Eastwood Wire Mfg. Co. to Eastwood Wire Corporation, Calvin H. Nealley retired from the presidency. Mr. Nealley returned to his former office, and when incident to a reconstruction or reorganization a receivership seemed advisable, the Court of Chancery of New Jersey appointed Mr. Nealley and Geo. W. Grimm, Jr., as receivers. It is hoped that the company will soon regain its former position.

◆ LINDLEY BOX & Paper Co., Marion, Ind., announces that a reincorporation of the company has been effected. The change has merely involved a transfer of the company's charter from the old inadequate Indiana corporation laws to the new and more liberal improved Indiana incorporation laws. It is felt the new setup will strengthen the company's financial position and prove an advantageous adjustment.

◆ HARRY D. ELIASON, formerly production manager for the Detroit Sulphite Pulp and Paper Co., Detroit, is now representing Johaneson, Wales & Sparre, wood pulp importers, New York, throughout the western states, with headquarters at Kalamazoo, Mich.

◆ THE FOURTEENTH Exposition of Chemical Industries will be held in the Grand Central Palace, New York, during the week of February 27 to March 4, 1933. At this early date, more than 179 companies have already reserved space.

◆ THE HOBERG Paper & Fibre Co. has moved its Chicago office from the Wrigley building where it has been located for the past ten years, to the new Merchandise Mart building. A. H. Bernhart is manager.

◆ C. F. ASKER has been appointed sales manager of the Swedish Pulp Co. to succeed S. Bowman, resigned. Mr. Asker was formerly assistant to Mr. Bowman.

◆ THE FALL MEETING of the Northwestern Division of the American Pulp and Paper Mill Superintendents Association will be held September 16 and 17 at Cloquet, Minn. C. I. McNair, Jr., of Northwest Paper Co., Cloquet, is general chairman.

◆ New Catalogues and Publications

Babcock & Wilcox Co., New York City—Illustrated descriptions portraying the design and construction of the principal products manufactured by this company are published in its latest complete catalogue. The operating characteristics of modern equipment for power, industrial and process plants gives this publication the nature of a handbook on operating costs. New engineering developments shown include a discussion of the striking advantages of Mercury-Vapor and Diphenyl and Diphenyloxide as heat-transfer mediums, and a new fully automatic process permitting substantial savings in the manufacture of sulphite pulp.

Barber-Colman Co., Rockford, Ill.—A new bulletin entitled An Electric System of Temperature Control is descriptive of typical applications of this system and the line of control equipment. Copies upon request.

Blaw-Knox Co., Pittsburgh, Pa.—The subject of a new catalogue is this company's new framed bag type dust collector. A unique feature of the Blaw-Knox dust collector is the special vibrating mechanism which keeps the cloth clean and provides continuous operation.

Columbia Alkali Corp., New York City—A new booklet is just received in which this company's products are listed, with a brief description of each. Other interesting features given are the uses of these products and shipping specifications.

General Electric Co., Schenectady, N. Y.—Electric Equipment for Woodworking is a publication designed to aid the machine manufacturer in his choice of electric equipment for high-speed drives. In addition to the discussion on motors, frequency converters and alternators, space is devoted to suitable control for starting, stopping, reversing and pole changing, as well as for supplying adequate undervoltage and overload protection.

B. F. Goodrich Co., Akron, Ohio—A new, condensed catalogue entitled Engineering Data, Industrial Rubber Goods, giving a simplified, comprehensive line-up of principal industrial rubber goods has just been issued by this company. There are engineering data and information which it is said has never before been published; tables on rubber transmission belting and conveyor belts, and much information of value and interest.

Goulds Pumps, Inc., Seneca Falls, N. Y. The Goulds Double Suction Centrifugal Pump, adaptable for any kind of drive, is the subject of a new Bulletin No. 200. The design of these new pumps represents a complete and thorough investigation and analysis of centrifugal pump design by the company's engineers. Diagrammatic figures illustrate and explain the features of construction, and there are a number of tables and illustrations.

New York State College of Forestry, Syracuse, N. Y.—Technical Publication No. 35 entitled An Atlas of Paper-Making Fibres, has just been received. Chas. H. Carpenter, graduate assistant, Department of Wood Technology, is the author. Fibres from fifty-six species of plants are figured in the Atlas; twenty-six from coniferous trees, seventeen from broad-lived trees and twelve from such miscellaneous sources as flax, straw, corn stalks, etc. The paper technician, wood technologist and plant anatomist should find this publication of value not only as an aid in the identification of paper-making fibres but as indicative of the cell types which are found in plant tissues.

Jos. T. Ryerson & Son, Chicago—A new issue of the Ryerson Journal and Stock List forms a very handy reference book on steel. In addition to complete general descriptions, specifications, sizes, etc., it contains the new extras on bands, the new cold finished steel extras, the new hot rolled cutting extras and other information of value to the steel user. Copies on request.

POWER

GENERATION + UTILIZATION + MAINTENANCE

This section turns the searchlight on power and its allied problems, showing big possibilities to save. Opportunities to improve conditions, methods, apparatus will be discovered. Worth while practices suggest new ideas and wider usages of equipment.

By W. S. JOULE

◆ Guarding Against Hot Weather Lubricating Troubles

Machinery that has operated throughout the fall, winter and spring, may give trouble directly hot weather occurs. The viscosity of any lubricating oil decreases with increasing temperatures. Where the temperature of the air is high and the temperature of operation is high, the sum total of these temperatures may be trouble—scored shafts, burned out bearings, shutdowns and expense.

Where a circulating system of lubrication is in use, hot weather may clearly suggest the advisability of increasing the rate of circulation, so carrying off the heat, and in this way combating the higher temperature outdoors. Where oil rings are used, it is often worth while to filter the oil or use new oil. Where steam is encountered, it is especially desirable before the arrival of hot weather to test all oils for emulsification with water, because highly fatty oils used in the steam cylinders sometimes work into the circulating oil supply with the result that it emulsifies with the water. Filtering improves the oil and increases its life very considerably. In some cases, where a very wide range of temperatures are encountered, it may be necessary to change the oil, using one of high viscosity during hot weather and low viscosity during cold weather.

In one instance where a very heavy armature had to be started up, it was found that during hot weather the static friction due to the low viscosity of the oil (resulting in the oil being squeezed out between journal and bearing) the voltage disturbance in starting up during the hot weather was too pronounced. By pouring several quarts of oil over the journal on each side so that the oil was able to trickle down, it was found possible to lessen the disturbance when starting up. Another hot weather stunt worth remembering is that deflocculated graphite may sometimes be used in emergencies to good advantage. A little of this type of graphite fed to the bearings may frequently enable a hot bearing to cool down and so remain in service without attention. About one-half of one per cent by bulk of graphite mixed with oil is usually sufficient. Graphite fills up the pores in the bearing metal, in this way lowering the coefficient of friction and so reducing the heating. Where a bearing is heating and it cannot be shut down, the use of a little graphite in this way may save the day. It is important, however, not to use more than sufficient, otherwise the graphite might clog up the feed pipes.

◆ Paint for Stack Maintenance

This is the time of year when smokestacks can be given a thorough inspection. Every stack should be inspected carefully at least every two years but preferably every year. A fact often overlooked is that a stack which is in intermittent service tends to corrode much more rapidly than one which is kept in service continually. In the majority of instances, the exterior of a stack is inspected while the interior is overlooked. This is unfortunate because corrosion tends to be greater on the inside than on the outside; morever, one stack may corrode more rapidly on the outside while another may corrode upon the inside.

The only way to make a thorough inspection is to have a man travel foot by foot up the stack as well as around it. The elements are responsible primarily for the corrosion of the outside of the stack, while acid and fumes of combustion in the presence of the moisture cause corrosion inside. For the exterior, paint is the remedy and the paint used should be one which is acid and moisture-proof, one which can expand and contract with the surface it covers, due to temperature changes, and one which will not peel or blister during hot weather or on account of heating of the stack due to the furnace gases. Painting of the exterior should be done every two years in northern sections of the country. Before applying a new coat, the old coat should be thoroughly scraped off so as to eliminate pinhole abrasions, etc. Two coats should be used.

Preventing corrosion on the interior of a stack is more difficult than that of protecting the outside, because of the hot flue gases which have to be contended with. These gases may cause rapid disintegration of the steel, since they are extremely corrosive, in the presence of moisture. This moisture may be that evolved from the combustion process or may be moisture which condenses in comparably cool wall of the metal stack, the condensate precipitating sulphurous acid. To this must be added, of course, the costly effects of carbon dioxide gas, which always attacks steel in the presence of moisture.

The interior of a stack will be protected only when the metallic wall of a stack is thoroughly protected from the acid and gases by means of firebrick. The lining should be carefully laid, special care being taken that no air gaps are allowed to exist between the lining and the metallic wall. Where these voids or interstices have not been closed up, corrosion may take place faster than were no lining installed, due to the concentration of the corrosive effects. Special care should be taken, therefore, to completely fill all voids and intervening space between brick and metal by grounding with cement.

The upper rings corrode faster than the lower, the probable explanation being due to the greater condensation at the top of the stack. This is why stack lining should invariably be carried to the full height of the stack.

Taking a stack out of service for any length of time is a frequent cause of accelerated corrosion. It is better to maintain unlined stacks in service, taking lined stacks out of service in preference to unlined stacks. For the same reason, where a stack is to be subjected to intermittent service, it is good policy to install a stack lining.

Where stacks of the guyed type are employed, frequent inspection should be made of the guy wires, since these may break due to swaying in the wind, due to corrosion and strain. Where men are called upon to climb these stacks, careful inspection should be made beforehand that the guy wires are sound and the stack strong enough to support the additional load. Guyed stacks are never lined. Where the advantage of the lining for reducing radiation losses are capitalized (so as to reduce the heat loss to the metallic walls), it will very often be found that it is a good investment to install a self-supporting stack lined with refractory, since it minimizes upkeep cost, minimizes radiation losses and improves the draft.

◆ A GOOD solution for marking on blueprints is made by dissolving washing soda in water until the solution will make a clear white line, then adding enough gum arabic to prevent the solution from spreading and making ragged lines. To make red lines on a blueprint, dip the pen first in red ink, then add a little of the soda solution to the pen by means of a quill. For this work a pen with a sharp point must be used, as one with a blunt point will not work well.

◆ THE SQUEAL of a leather belt is an excellent tell-tale of appreciable slippage. It is a warning to check the drive, to find and correct the difficulty.

The MONTH at WASHINGTON

CONGRESS ADJOURNS—A total of 525 laws were enacted during the session of Congress just closed, including 316 House bills, 166 Senate bills, 28 House joint resolutions and 15 Senate joint resolutions. There were 4,896 bills introduced in the Senate and 426 resolutions of various kinds. The President vetoed eight bills.

The House Special Committee investigating Government competition with private industry, will continue its inquiries during the summer and until the next session of Congress, and hearings will begin in September. A large number of complaints have been filed with the committee, which will be investigated and reported upon.

One of the momentous bills enacted in the closing sessions was the two billion Emergency Relief and Construction Act of 1932; including $300,000,000 for temporary loans by the Reconstruction Finance Corporation to such states as are unable to finance the relief of distress; $1,500,000,000 in loans by the Corporation for reproductive construction work of public character on terms which will assure repayment, resulting in employment for hundreds of thousands; broadening of the powers of the Corporation in the character of loans it can make in assisting agriculture, resulting in an improvement of the position of the farmer.

This bill was considered by the President as a strong step toward recovery.

Business Conditions—Almost immediately after the adjournment of Congress, business showed signs of improvement in many sections of the country. Various reports received in the White House show that while improvement will be slow, it will be sure. Stocks of commodities are exhausted and there should be a general move to buy, at least moderately. With the cessation of falling prices and a tendency for prices to increase, buying will be considerably accelerated. Wholesale commodity prices gained for four consecutive weeks, then marked time. There is every indication that they will continue to advance steadily, with only temporary setbacks. Conditions in the Canadian west are said to be more satisfactory. There are also scattered reports of economic recovery in other parts of the world, including optimism in the Philippines created by the slow uptrend in raw material prices.

The Department of Commerce has compiled statistics on business trends since 1923, with monthly averages for earlier years since 1913, incorporated as an annual supplement of the Survey of Current Business, covering practically all available measurements of economic activity. This volume is designed to afford in readily available form the back data for more than 2,100 statistical series carried in the monthly issues of the Survey, and should be of considerable value to business men, research workers, and all those interested in recent economic changes.

Bureau of Standards Findings—Recent tests at the Bureau of commercial handmade book papers show that they have much the same range of stability of strength, under the heat test, as found in machine-made book papers.

The Bureau has made retests of the folding endurance of 10 bond and ledger papers ranging in composition from 100 per cent sulphite to 100 per cent rag, after 3 years of natural aging. In this short time many papers have undergone marked decreases in folding endurance.

Tests made of a fiber board product, developed commercially for the same uses as ceramic tiles, showed that the material had several properties particularly desirable for such purposes.

Recent tests of various grades of manifold papers show that in general they have much poorer quality for permanent records than the bond papers used for the first sheet in typewriting records.

Employment and Payrolls—Changes in employment and earnings for July, as compiled by the Bureau of Labor Statistics, based on returns from 64,104 establishments in 16 major industrial groups having 4,246,037 employees, with earnings of $84,206,424, show the following changes for

	Employment			Pay-roll totals		
	1931	1932		1931	1932	
	July	June	July	July	June	July
Paper and printing	90.2	81.6	79.9	89.6	71.6	67.7
Paper and pulp	81.0	75.0	73.3	71.2	54.8	49.9
Paper boxes	80.9	69.1	69.1	79.8	58.6	57.8
Printing, book and job	88.7	77.4	75.1	87.5	66.9	62.8
Printing, newspapers and periodicals	106.2	99.4	97.7	107.9	92.0	88.4

Interstate Commerce Rulings—In Edgewater Paper Co. vs. Minneapolis, St. Paul and Sault Ste. Marie Ry., No. 24323, the Interstate Commerce Commission recently ruled that the rate charged on used offset paper, in rolls, in carloads, from Philadelphia to Menasha, Wis., were applicable and not unreasonable and the complaint was dismissed. Charges on the shipment in question were collected at the combination rate applying on wrapping paper, namely, 58c, composed of the sixth-class rate of 45.5 cents, minimum 36,000 lb., to Manitowoc, and a commodity rate of 12.5 cents, minimum 40,000 lb., beyond. The complainant sought a combination commodity rate contemporaneously applicable on scrap or waste paper from and to the considered points, namely, 48c, composed of 41 cents minimum 24,000 pounds, subject to rule 34, to Manitowoc, Wis., and 7 cents, minimum 30,000 pounds, beyond.

In Wax Paper Products Co., vs. Chicago & N. W. Ry., No. 24682, the commission found that the rate on wrapping and printing paper, in separate carloads, from Middletown, Ohio, to Omaha, Neb., was unreasonable and reparation was awarded. Charges were collected at the applicable combination rate of 47.5 cents, composed of the sixth-class rate of 24.5 cents, minimum 36,000 lb., to the Mississippi River, and a commodity rate of 23 cents, minimum 40,000 lb., beyond. The paper company sought reparation based on the present rate of 42.5 cents, minimum 36,000 lb., established Oct. 15, 1930, in a decision of the commission (Advance Bag & Paper Co. vs. B. & O. R. R. Co., 167 I. C. C. 93).

In Western Tablet & Stationery Co. vs. B. & O. R. R., No. 24631, the commission found that the rate on printing paper, other than newsprint, in carloads, from Chillicothe, O., to St. Joseph, Mo., was unreasonable and reparation was awarded. Charges were collected at the applicable combination rate of 49.5 cents, composed of the sixth-class rate of 26.5 cents to St. Louis and a commodity rate of 23 cents beyond. The complaint sought reparation on the basis of the present rate of 44.5 cents, based on the same decision as the case last above cited.

In Crown Willamette Paper Co. vs. Arizona Southern R. R., No. 24149, the commission found that the ratings and rates applied on paper merchandise envelopes, in carloads and less than carloads, between various interstate points in western territory, were applicable; applicable ratings and rates not being shown to have been or to be unreasonable or otherwise unlawful, and the complaint was dismissed.

Specifications Approved for Photographic Paper—Specifications for photographic black-line paper and photographic negative paper, prepared by the Photographic Supplies Committee of the Federal Specifications Board, have been approved for use of the departments and independent establishments of the government in the purchase of those commodities. The service requirements for the papers are rather severe because they must be strong to withstand severe and frequent handling, and have sufficient purity to withstand many years of aging without appreciable deterioration. The specifications are of special interest because the fiber requirements are based on information developed in the Bureau of Standards studies on the permanence of paper. The results obtained in these studies have indicated that ability of paper to resist aging is dependent, as far as the character of the fibers is concerned, on their cellulosic purity.

+ CANADIAN NEWS +

◆ Newsprint Statistics

Production of newsprint continues to hold at a low level, with the output of Canadian mills for June amounting to 161,368 tons, as compared with 193,971 in June of last year. They produced 150,883 tons less in the first six months of 1932 than in the first six months of 1931, a decrease of 13 per cent.

During the month of June exports of newsprint from Canada had a value of $7,377,790, which is a slight increase over the value for the previous month at $7,162,049, but was substantially below the $10,069,585 recorded in June 1931. How completely the market for the newsprint mills of the Dominion lies in the United States is shown by the fact that of the $7,377,790 of exports in June, shipments to that country had a value of $6,501,656; Australia was the next best customer with a total value of $271,109, while Argentina with $246,684 and the United Kingdom with $103,202 followed.

During the same month exports of wood pulp and screenings from the Dominion had a value of $1,296,166, which contrasts with $1,381,025 in May, and with $2,241,548 in June of last year; of the total for June, shipments to the United States accounted for $1,044,040.

QUEBEC

◆ Canadian International Paper Net Revenue Off

Canadian International Paper Co. and subsidiary companies report that consolidated net revenue in 1931 available for interest and depreciation was $4,530,869, compared with $5,612,082 in 1930. The 1931 figure before depreciation was nearly three times interest requirements on all the company's first mortgage bonds and prior liens. The balance from operations available for surplus in 1931 was $755,900 against $1,337,526 in 1930.

Earnings of New Brunswick International Paper Co. and International Power and Paper Co. of Newfoundland are not included in either the 1930 or 1931 earnings figures, as Canadian International Paper acquires these companies as of December 31, 1931. Their acquisition is reflected, however, in the company's consolidated balance sheet as at December 31, 1931.

◆ Proposed Donnacona Reorganization Plan

Donnacona Paper Co. is involved in the effort to straighten out the affairs of Price Bros., of which it was up till lately a subsidiary. A plan of reorganization has been drawn up, the principal features of which are as follows:

The present common shareholders will receive one share for each 10 held. The present authorized share capital of Donnacona is 200,000 shares of no par value, of which 150,000 shares have been issued and are outstanding. The present issued shares will be reduced to 15,000, leaving 50,000 unissued, after which the capital stock will consist of 65,000 shares, which will be increased to 244,892 shares, divided into 121,804 Class "A" shares and 123,088 Class "B." The two classes of common stock will rank equally as regards dividends, but voting rights will be vested with the Class "A" shares until specified obligations to senior securities have been fulfilled. The present shareholders will receive Class "B" shares.

The holders of "A" and "B" debentures, which are at present outstanding to a total capital amount of $4,600,000, will receive 92,000 shares of new "B" common stock, which is at the rate of 2 shares for each $100 principal amount of debentures; and Price Bros. will receive 16,088 of the same class of shares in satisfaction of an unsecured claim of about $804,393, representing advances made by the parent company to its subsidiary.

There are presently outstanding $6,584,000 of the 5½ per cent first mortgage sinking fund gold bonds, due February 1, 1948. The bondholders are asked to waive existing defaults and agree to the cancellation of the two years' interest on the bonds and change in the company's obligation to pay the next ensuing two years' interest, that is, between August 1934 and February 1936, from net income only. In consideration of these concessions, they will receive 121,804 Class "A" shares or 18½ for each $1,000 principal amount.

Changes are to be made in the company's contract with Shawinigan Water & Power Co., and, in consideration of concessions from Shawinigan, certain distribution systems and franchises will be conveyed to Shawinigan.

◆ THE CITY OF Cap de la Madeleine will request the next session of the Provincial Legislature to detach from the city of Three-Rivers the Wayagamack Island, on which are located the mills of the Wayagamack Pulp and Paper Co. and to annex it to Cap de la Madeleine. This decision has been taken after the refusal of the city of Three-Rivers to rescind an agreement with the Wayagamack Pulp and Paper Co. and the Wayagamack News, Ltd., through which these two companies, following a reduction of their taxes, agree to employ only residents of Three-Rivers. Premier Taschereau vainly requested the city of Three-Rivers not to adopt such a policy, and even intimated to the municipal authorities that legislation will be brought forward at the next session to counteract such a decision if taken.

◆ IN CONNECTION with the reopening of the groundwood mill of the Chicoutimi Pulp Co., the company is said to be closing contract for about 30,000 tons of material for shipment to interests in Great Britain; it is reported that close to 10,000 tons of pulp will also be exported to France. The plant has a rated capacity of about 350 tons of groundwood per day. The Government of Quebec has recently issued a decision to exempt the mill from water tax for a period of five years; this tax, heretofore, has averaged about 85 cents per ton of pulp.

◆ Ross Appointed to Succeed Cameron

The appointment of Dr. James H. Ross as director of the Pulp and Paper Division of the Forest Products Laboratories of Canada has been announced. He has been in charge of the research work being carried on at the Institute on University St., in Montreal, in co-operation with the Canadian Pulp and Paper Association, since the death of E. P. Cameron in 1931.

Dr. Ross is a graduate of McGill University in chemical engineering 1920, and a Doctor of Science from the University of Geneva, 1922. Since 1921, he has been a member of the staff of the Forest Products Laboratories of Canada, and has done notable work in his investigations into pulp and paper problems.

◆ ON JULY 28 Lord Beaverbrook announced that, in view of the fact that several security holders and some creditors had not accepted the reorganization scheme for Price Bros. & Co. which he put forward on June 4th, he has withdrawn the plan.

◆ INABILITY to pay the interest on its bonds and debentures has just been announced by the Lake St. John Power and Paper Co., which operates a newsprint mill at Dolbeau. The company is a subsidiary of St. Lawrence Corp., having been acquired by the latter through exchange of stock about two years ago. Arrangements are under way for the calling of meetings of holders of the company's bonds and debentures for the purpose of the appointment by such meetings of committees representing the bondholders and debenture holders, respectively, in accordance with the provisions of the trust deeds, and of taking such further action as may seem advisable for their protection.

ONTARIO

◆ Province Takes Over Abitibi Power Development

As the most convenient way of getting title to the property of the Ontario Power Service Corp. on the Abitibi River, the Provincial Government is offering the bondholders of the company $18,000,000 of the Ontario Hydro-Electric Power Commission's 20-year debentures in exchange for the $20,000,000 worth of the corporation's outstanding bonds. The exchange is subject to the

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Barium Chloride	Salt Cake
Barium Sulphate (Blanc Fixe)	Soda Ash
Bleach	Sulphuric Acid
Caustic Soda	Tri-Sodium Phosphate

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condition that 90 per cent of the corporation's bonds are deposited for exchange.

The Hydro Commission debentures will be dated October 1, 1932, and instead of bearing interest at 5½ per cent, payable in Canadian or United States funds, will be payable in Canadian funds only. They will bear interest at 3½ per cent for five years; 4½ per cent for five years, and 5 per cent for ten years, with the right to the commission to redeem on any interest date at par. The debentures will be guaranteed by the Province.

All work has been stopped on the power development at Abitibi Canyon. The project was well on its way to completion; more than half the generating machinery has been installed, and had the company succeeded in obtaining the necessary finances, power would have been delivered by October 1st in accordance with the terms of its contract with the Hydro Commission. At the present time only a few men remain to guard the property, and no announcement has been made as to when the work will be completed.

The Sault Ste. Marie Division of Abitibi Power & Paper Co., which had been running only four or five days a week during the month of June, advanced its rate of operation to full time during the month of July, and this will be maintained until further notice.

◆ SPRUCE FALLS Power and Paper Co. reports net profits for the year ended April 30, 1932, amounting to $1,106,262, as compared with $765,002 the previous year. Dividends paid first and second preferred shareholders amounted to $973,007, and there was remaining after these deductions an operating surplus of $206,121 carried forward, while the previous year there had been a deficit of $219,405. According to president F. J. Sensenbrenner, the sales of the company of newsprint and sulphite were 2.87 per cent less in value than during the preceding year; this was partly due to lower prices received for sulphite, but mainly the result of substantial reduction in the price of newsprint during the fiscal year.

◆ BONDHOLDERS of Quinte and Trent Valley Power Co., subsidiary of Canadian Paperboard Co., have approved a proposal to waive interest payable and deferred during the period of 24 months from and including July 1, 1932, to July 1, 1934. It is stipulated that interest accumulated and for the previous period of eighteen months shall also become payable at that time. They have also agreed that sinking fund be waived and inoperative during the years 1932 and 1933. Interest has been in default since November 1930.

◆ CANADIAN Wallpaper Manufacturers, formed within recent years as a merger, with English capital in control, is feeling the pinch of general business conditions and the sharp drop in building operations in the Dominion. The organization came into existence about five years ago and from the outset the British company has held a substantial interest in the undertaking. The union, it is stated, was justified by the fact that Canada was the only part of the British Empire outside England where wall papers were made. On the common stock, dividends paid have been 3 per cent for 1927-28, followed by 6, 10 and 5 per cent. The idea of spectacular dividends was discouraged from the outset, but it will be seen that up to the past year the return to Canadian Wallpaper Manufacturers was satisfactory. Now for 1931-32 the Canadian company, owing to trade depression in the Dominion, has not done well enough to warrant declaration of a dividend; the balance brought forward, however, was reduced only from $307,600 to $302,200.

BRITISH COLUMBIA

◆ BECAUSE of the Provincial Government's new tax on fuel oil, the British Columbia Pulp and Paper Co. has decided to shut down its mill at Port Alice, Vancouver Island; the company's mill at Woodfibre was closed down several weeks ago, and not a single production unit is now in operation. Powell River Co. and Pacific Mills, Ltd., British Columbia's newsprint producers, are also feeling the effect of the tax, but they have been able to reduce their consumption of oil by a substantial margin in recent years through the substitution of hogged fuel obtained from sawmills in Burrard Inlet.

◆ PACIFIC MILLS, LTD., operating pulp and paper mills at Ocean Falls and a paper converting plant at Vancouver, report net profits after bond interest, depreciation and taxes, for the year ended April 30, 1932, at $215,904. After payment of $119,934 in preferred dividends there remained $95,970 which brought total earned surplus to $6,282,968. For the twelve months ended April 30, 1931, net profits were $413,515 and there was a balance after preferred dividends for that period of $293,581.

◆ ON THE RECOMMENDATION of the National Trust Co., holders of Vancouver Kraft Co. 6½ per cent first mortgage bonds dated May 15, 1928, have granted a four-year moratorium on the interest and sinking fund payments on the bonds which were in default May 15, 1931. Under the terms of the agreement the Columbia River Paper Co. is to advance sufficient money to meet shut-down expenses of maintaining the property, a partly completed 100-ton kraft mill at Port Mellon, up to May, 1935, receiving for such advances four-year 6½ per cent notes of Vancouver Kraft. The Columbia River Paper Co. can terminate the agreement on 60-day notice.

NEW BRUNSWICK

◆ Fraser Approves Amended Reorganization Plan

Considerable opposition was raised by various classes of security holders of the Fraser Companies to the proposed reorganization plan, as outlined in these columns last month. In consequence of this, several important changes were made in the plan, with a view to according more equitable treatment to all classes of security holders. At a number of meetings held at various times in the course of the month of July the amended plan was approved by holders of the company's first mortgage bonds, debentures and gold notes, as well as by the bondholders of the Restigouche Co., wholly owned subsidiary of Fraser Companies.

It now remains for the common shareholders to pass on the scheme. A meeting will be called shortly, it is understood, and the approval of shareholders will be sought, after which application will be made to the court for an order making the scheme of reorganization effective.

◆ THE PLANT of the Nashwaak Pulp and Paper Co., situated at St. John, is being reconditioned after having been closed since 1930. According to representatives of the new owners, the Port Royal Pulp and Paper Co., of Quebec City, the manufacturers of bleached sulphite will be carried out on the strength of their great faith in the St. John River Valley and the Port of Saint John. Dependent on market conditions, the hope is to resume pulp making in September. Waste from the sawmill at Van Buren, Me., will be used, and also pulpwood from the St. John River Valley.

❖ ❖ ❖

◆ Forestry College Announces Change in Papermaking Course

The New York State College of Forestry, Syracuse, announces an important change in courses offered in pulp and paper manufacture. Following the recent resignation of Dr. Louis E. Wise, who has been professor of Forest Chemistry for a number of years, the Forest Chemistry Department was reorganized thereby setting up an entirely new Department of Pulp and Paper Manufacture.

C. E. Libby, who has been professor of pulp and paper manufacture for a number of years, has been appointed head of this department. F. C. Peterson, who has been instructor in pulp and paper manufacture, has been promoted to assistant professor of forest chemistry. Howard Morgan, a graduate of the college, who has been with the Oxford Paper Co. for five years and intimately connected with the development and operation of their new research laboratory, has been made instructor in pulp and paper manufacture.

◆ DISMISSAL of all receivership proceedings pending against the Container Corporation of America was announced July 28. The allegations set forth in two bills of complaint filed were found to be in error.

◆ WM. J. ROBERTSON, president of Heller & Merz, chemical manufacturers of Newark, N. J., passed away suddenly July 23 in New York City. A son and daughter survive.

Addressed to—

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Cumulative Scores,
July 1, 1931, to June 30, 1932, Inclusive
9 Mills Finish Perfect Year

PERFECT SCORES

Division I—Paper and Pulp Mills

	ENTRANT	MILL	LOCATION
GROUP A			
GROUP B			
GROUP C	Cornell Wood Products Co.	Cornell	Wisconsin
	Pioneer Paper Co.	Los Angeles	California
GROUP D	Continental Paper & Bag Corp.	Ashland	New Hampshire
	United States Gypsum Co.	No. Kansas City	Missouri
	International Paper Co.	Riley	Maine
	Hollingsworth & Whitney Co.	Madison	Maine

DIVISION II—Remanufacturing

Oxford Paper Co.	No. 2	Rumford, Maine
Kimberly-Clark Corp.	Atlas	Appleton, Wis.
Bemis Bros. Bag Co.	East Pepperell	Massachusetts

IMPERFECT SCORES—Division I

	Key	Rank	Points Credit	Points Debit
GROUP A	PA-10	1	951.056	
	PA- 2	2	765.696	
	PA- 3	3	738.288	
	PA-11	4	721.233	
	PA- 7	5	557.408	
	PA- 5	6	486.128	
	PA- 6	7	372.416	
	PA-12	8	115.904	
	PA- 1	9	85.664	
GROUP B	PB- 5	1	969.568	
	PB- 4	2	877.552	
	PB-18	3	843.856	
	PB-16	4	835.024	
	PB-27	5	808.160	
	PB-23	6	790.224	
	PB- 8	7	745.248	
	PB-14	8	738.240	
	PB-30	9	733.232	
	PB-15	10	649.264	
	PB- 9	11	633.600	
	PB-20	12	585.520	
	PB-13	13	581.824	
	PB- 2	14	559.136	
	PB- 1	15	469.216	
	PB-25	16	371.440	
	PA- 8	17	331.648	
	PA- 4	18	281.376	
	PB- 3	19	189.696	
	PB-19	20	50.840	
	PB-17	21		12.528
	PB-24	22		113.712
	PC- 8	23		472.400
	PB- 6	24		554.848
GROUP C	PC-34	3	908.096	
	PC-32	4	820.896	
	PC-25	5	812.416	
	PC- 9	6	738.912	
	PC-10	7	714.256	
	PC- 3	8	646.288	
	PC-33	9	637.728	
	PC-12	10	534.816	
	PC-18	11	464.576	
	PC- 1	12	450.368	
	PC-44	13	430.656	
	PC-38	14	419.312	
	PC-37	15	377.120	
	PC-20	16	375.776	
	PC-11	17	353.184	
	PC-26	18	343.824	
	PC-21	19	330.832	
	PC-39	20	311.280	
	PC-23	21	311.056	
	PC-24	22	39.488	
	PC-43	23	31.584	
	PC-50	24		9.008
	PC-17	25		88.336
	PC- 7	26		145.696
	PC-19	27		155.264
	PC- 2	28		211.616
	PC-31	29		253.792
	PC-53	30		259.216
	PC-42	31		260.064
	PC-30	32		327.040
	PC- 4	33		533.376
	PC- 6	34		1,053.600
	PC-13	35		1,147.776
	PC-47	36		1,545.616
	PC- 5	37		1,557.792
GROUP D	PC-46	5	471.072	
	PD- 8	6	204.336	
	PD- 2	7		888.016
	PD- 4	8		1,896.368

Division II

RA- 1	4	948.576	
RC- 2	5	651.536	
RC-10	6	630.080	
RD- 1	7	629.568	
RD- 3	8	494.720	
RC- 6	9	468.208	
RC- 8	10	327.232	
RB- 1	11	244.624	
RC- 9	12	243.440	
RC- 3	13	208.544	
RC- 5	14	80.416	

Total withdrawals—PA-9, PB-10, 11, 12, 22, 26, 28, 29; PC-14, 15, 22, 26, 27, 29 40, 41, 45, 49, 51, 54, 55, 58; PD-3, 5, 10, 11; RC-4, 7; RD-2, 4.
No May or June report: PB-7, 21; PC-52.
No June report: PC-35, 36, 56, 57; PD-12; RC-11.

"These statistics are tentative. They are not to be construed as announcing the group winners nor as being final. All records will be carefully checked by headquarters office before a final report is published. As insufficient time in which to audit the statistics has elapsed since the last reports were received, the final report and announcement of winners will not be made until the 21st annual Safety Congress in Washington, D. C., October 3 to 7."—*G. E. Burns, National Safety Council.*

Don't Be Misled
regarding
Continuous Metering Systems

From news items, circulars, etc., appearing during the past few months it might be inferred that the 28 installations listed below were the product of certain associated companies.

A. P. W. Paper Co. ..... Eleven Systems
Maine Seaboard Paper Co. ..... Two Systems
St. Anne Paper Co. ..... Two Systems
Manitoba Paper Co. ..... Two Systems
Murray Bay Paper Co. ..... Two Systems
N. B. International Paper Co. ..... Two Systems
Fraser Paper Ltd. ..... One System
Escanaba Paper Co. ..... Two Systems
Abitibi Power & Paper Co. ..... One System
Bogalusa Paper Co. ..... Two Systems
Hennepin Paper Co. ..... One System

This is NOT a fact.

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furnished each and every one of the above 28 systems in these 11 mills.

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also furnished 96 more Systems in 51 mills in the United States, Canada, Newfoundland and England and 45 additional Continuous Metering Systems in 12 different foreign countries.

TRIMBEY MACHINE WORKS

still retain* their absolute and complete rights to manufacture and license apparatus under the CONTINUOUS PROCESS patents, and when offered a substitute for the "TRIMBEY," just ask IF one has ever been built, WHERE it was installed, and HOW LONG it operated. *Enough Said.

The recent 500 ton per day Trimbey & Tibbitts Proportioning and Metering System for the Ontario Paper Co., Ltd., has been followed by one to Italy, one (a repeat order) is being shipped to France and one is under construction for Germany.

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FLOAT VALVES — WEIGHT REGULATORS
METERING SYSTEMS — PULP SCREENS

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◆ Papermaking in China

In a recent number of the *Illustrated London News*, Dr. H. Gordon Thompson is the contributor of an article on papermaking in China which is illustrated with photographs of the processes employed.

The manufacture of paper has been carried on in China for hundreds of years, but it is only of late that the foreign machine-made article has been introduced to replace the crude Chinese products.

The old methods of papermaking by hand from such raw materials as rice straw, bamboo and mulberry twigs, are still found in certain upcountry districts.

In the province of Chekiang, the city of Fuyang is the center of the straw, bamboo and mulberry paper industry, and coolies can frequently be seen on their way to the paper plants carrying loads of bamboo or mulberry twigs.

The steps in the process of making paper by hand from rice straw include the stacking of the straw in the open and spraying it regularly with water, while being periodically turned over and restacked for a period of two weeks. This serves to soften the straw fiber, which is then treated with slaked lime, some 370 lbs. of lime being used for 4,000 lbs. of straw and water added. The mixture of straw, lime and water is macerated by being trodden underfoot by a water-buffalo for twenty to thirty minutes. The macerated straw is then taken out of the vat, piled up, and allowed to stand. The Chinese say that as soon as steam rises vertically from the heap, rotting is in full swing and it is time for the pulp to be turned. The rotting process is generally continued for three to five days, during which the turning is repeated four or five times.

The softened mass of pulp is then put into a vat and beaten under the hoofs of a buffalo a second time: following this, it is crammed into canvas bags and washed by a to and fro movement in the water of a stream. In this way, the lime is washed out. The water is then squeezed out of the bags leaving a homogeneous mass of pulp.

The rest of the operation for the production of a handmade sheet has little of novelty in it. Holding in his hands a fine oblong sieve, generally divided into three sections, the papermaker plunges this into the watery suspension of fibers, and with a quick movement causes a thin layer of pulp to be deposited on the bottom of the sieve. After the excess water drains off, he inverts the sieve and deposits the sheet of matted fibers onto a pile at his side. The pile of sheets is then transferred to the worker's cottage, where they are separated by the women of the family and carried out to be dried in the sun. When dry, the sheets are collected and packed, and the rough edges are rubbed down with a stone before being sent to the market for sale.

The paper made from bamboo is of a somewhat finer quality than that manufactured from rice straw, and the process is a longer one. Only very young bamboo shoots are used, and the best time for cutting is reckoned as twenty days after the summer solstice and before the leaves appear.

The bamboo is split longitudinally and kept for forty days in layers mixed with lime in the slaked lime vat. Though softened, the bamboo retains its shape: it is then taken out, washed in bundles to remove the excess of lime, put back into the vat, covered with straw, and allowed to stand for a further forty days.

The lengths of bamboo, now thoroughly softened, are taken, and the outer yellow fibers peeled off from the inner white ones. From these a white and a yellow pulp is produced. The white, containing little lime and requiring little water for washing, is treated at once in the sieve trough, and the layers of paper are made in the same way as rice-straw paper.

The harder yellow fibers take much longer to soften to a pulp, and contain much lime, so are allowed to stand until the following spring, by which time they have become thoroughly macerated. The lime can then be washed out and the pulp made into paper in the usual way.

These kinds of Chinese paper, together with mulberry-bark paper, which is made as a by-product of the silk industry, are utilized equally well for paper currency, the paper figures used at funeral ceremonies, or for paper umbrellas and other domestic purposes.

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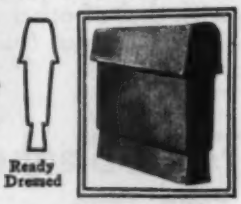

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◆ Wisconsin Paper Mills Organize Association

Twenty-seven paper mills of the State of Wisconsin recently formed an organization known as the Wisconsin Paper Group, created for the purpose of carrying on a campaign for supplying information to the numerous papers and paper products available from the Wisconsin area, and, further, to inform paper merchants and large paper buyers of a definite method for assembling these grades of papers and paper products in their carload shipments.

A co-operative advertising campaign has been launched in the trade publications and this will be supplemented by direct-mail campaigns to impress the merchant with the advantage of quick turnover of stocks and acquaint him with the service and economy of pool-car shipments and the advantages of Wisconsin papers.

Recently a data book has been compiled that gives a classified list of grades available, freight and transportation rates to all parts of the United States, lists of mill brands, a schedule of pool cars now operating and other data valuable to the paper merchant and the large paper buyer. This book is furnished gratis to all who may be interested.

The officers of this organization are: Norman S. Stone, Mosinee Paper Mills Co., Mosinee, president; Leo E. Croy, the Menasha Products Co., Menasha, vice president, and C. B. Clark, Riverside Paper Corp., Appleton, secretary-treasurer.

Hurja-Johnson-Huwen, well-known advertising agency of Chicago, has been retained to direct the advertising campaign for the group.

◆ PAPERBOARD INDUSTRIES Association held its July meeting at Briarcliff Lodge, Briarcliff Manor, N. Y., July 13 and 14. The general business situation and the problems of the industry were carefully analyzed, and it was clearly brought out that the situation facing the industry is beyond the control of any individual or any group of manufacturers, and that those difficulties can be solved only through co-operative effort on the part of all factors in the industry. The possibilities for betterment of these conditions were discussed, and plans are under way looking to improvement.

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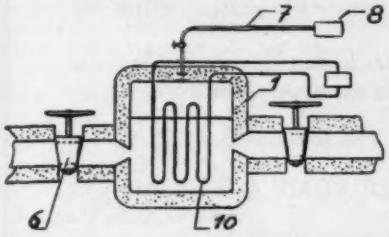
TECHNICAL DEVELOPMENTS

IN THE PAPER INDUSTRY ■ DOMESTIC AND FOREIGN

The following abstracts are of the latest developments found in the foreign press and in the patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

◆ Increasing Slowness of Paper Stock by Pressure

A paper stock is slower, the more water is absorbed by the pulp fibers. This absorption of water is, however, increased by an increase in pressure. Accordingly, the pulp that is to be worked up into paper, is subjected to a high pressure in a container (1) which is shown in the accompanying illustration. Compressed air is introduced into



this container through the line (7), the compressed air being produced in the compressor (8). The pressure should be as high as fifty atmospheres. After the stock has been led into the container (1) through the opening provided therefor, the container is closed by opening the valve (6). The action of the pressure is increased by cooling the stock. For this purpose there is provided within the container the cooling coil (10), through which the cooling liquor flows. M. P. Thierry. French Patent No. 714,693.

◆ Elementary Chlorine in Bleaching of Sulphite Pulp

It is advantageous to wash the pulp during its bleaching with elementary chlorine in the beater. When the process is carried out in wash drums assisted by screw presses and filter presses, a difficulty is introduced due to the considerable quantity of hydrochloric acid which is liberated during the chlorinating process. Experiments have shown that about seventy per cent of the chlorine which takes part in the reaction is converted into hydrochloric acid, so that the contents of the beater always react acid. This is an important matter from the standpoint of the material of construction of the washing apparatus. The author has carried out the chlorine bleaching process in such a manner that the stock is simultaneously washed in the beater during the treatment with elementary chlorine. This removed the difficulty of acid pulp and did not entail any appreciable loss of chlorine. Care must be taken in this operation to maintain a suitable reaction temperature, so that the reaction between the chlorine and the pulp takes place as promptly as possible and the stock mixture passes into the washing drum as free from active chlorine as possible. It is important in this connection that stock that has not been stored too long should be bleached, for the stock loses its reactivity during storage. A special apparatus has been provided for carrying out this process. There is naturally considerable saving in time. There is also a certain saving in chlorine. The absorption of chlorine by the pulp becomes slower towards the end of the process, and it therefore becomes advisable to stop the washing or to facilitate the absorption of the chlorine by raising the temperature. These methods will decrease loss of chlorine. The residual acid in the pulp is neutralized by the addition of milk of lime, and then the pulp can be washed in screw presses or filter presses. The after-bleaching with combined chlorine is then carried out in the usual manner, irrespective, whether intermediate treatment with alkalies or with milk of lime is used, so that a particularly clean pulp is obtained. This is, however, always combined with loss of pulp values. Percy Waentig. Der Papier Fabrikant, 1932, pages 269-270.

◆ Determining Iodine Number of Pulp

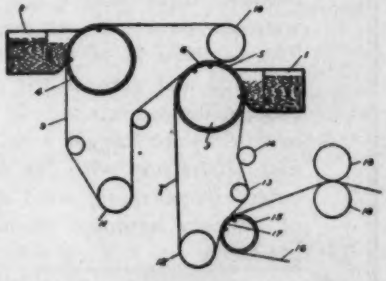
Various methods are studied and criticised. They are used in analyzing cotton linters and various types of pulp, including unbleached sulphite pulp of the easy bleaching and hard grades, bleached sulphite pulp, soda pulp, mechanical wood pulp, lignin (Willstaetter), etc. It was found that the iodine number determination as proposed by Bergmann Machemer as a substitute for the determination of the copper number should not be used on pulps. On the other hand, this method can be used with good results in a more simplified manner for the control of operations in the manufacture of pulp and paper in the case of unbleached stocks. K. G. Jonas and E. Borchers. Papier Fabrikant, 1932, pages 301 to 303.

◆ Alkali Ratio and Properties of Kraft Pulp

A study has been made of the relation between the alkali ratio and the properties of kraft pulp made from pinewood and firwood. The standard percentage of alkali based on the weight of wood treated is 25.2 per cent. The ratio was reduced to twenty per cent in the experiments and the quantity of liquor was 1.8 liters per three hundred grams of wood. The sulphide content was 14.3 per cent of the total quantity of active alkali. The time of digestion was prolonged in order to obtain the same degree of digestion as in the stronger liquor. The prolongation of digestion amounted to about three hours. It was determined that under these conditions that firwood gave substantially stronger paper than pinewood. Furthermore, the firwood pulp could be much more easily beaten than the pinewood pulp. It was also found that the lowest limiting value of the concentration of alkali for this digestion was twenty per cent. This is particularly true for pinewood. The strengths of papers made from woods digested with various strengths of digestion liquor were also determined. Erik Haegglund and C. Nyman, Zellstoff und Papier, 1932, pages 65 to 66.

◆ Making Two-Ply Paper

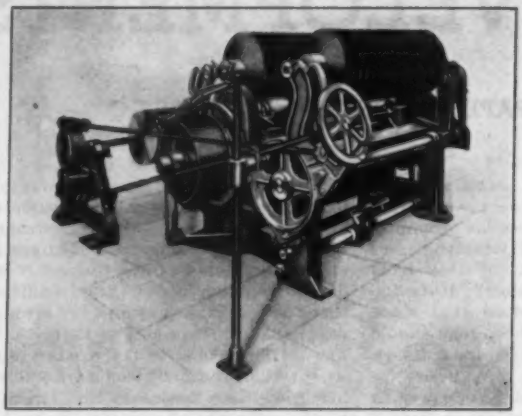
The accompanying illustration shows an apparatus for the manufacture of paper from two webs. A large suction roll is provided alongside the suction box and the metallic wire runs over the suction roll. Two-ply and multi-ply paper is made by this process. The illustration shows hows the rotating suction



rolls (3) and (4) in the stuff chests (1) and (2) produce the vacuum which is required for removing the paper to the metallic cloth (7) and (9). The paper webs on the two metallic cloths are united in back of the roller (10) on the suction roll (3), which contains two suction chambers (5) and (6). The double web is then carried over to the wet felt (16), which is provided with the felt suction roll (15), and the wet felt carries the double web to the first press (18). W. H. Millspaugh. French Patent No. 714,446.

◆ Economy in Calender Roll Drive

The consumption of power in the operation of the calender is studied and formulae are developed whereby it can be calculated. The throughput of the machine depends on the time of operation, time consumed in tending the machine by hand and the speed of the machine. Reducing the second factor increases the yield of the machine con-



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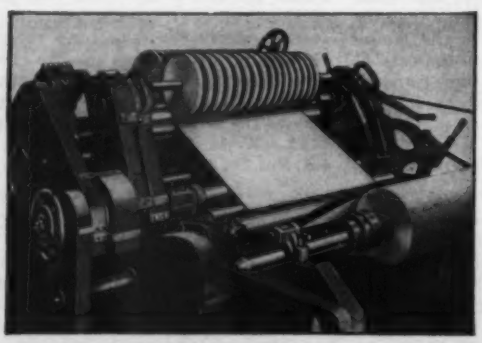

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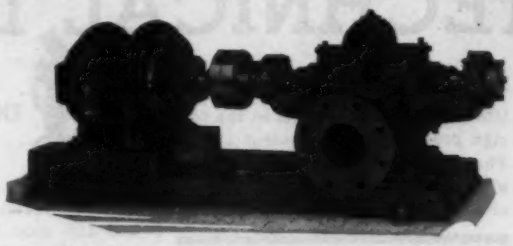

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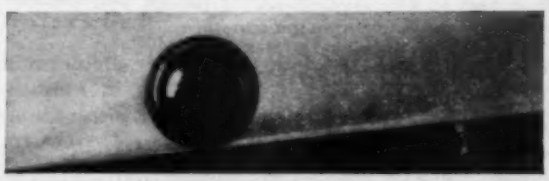

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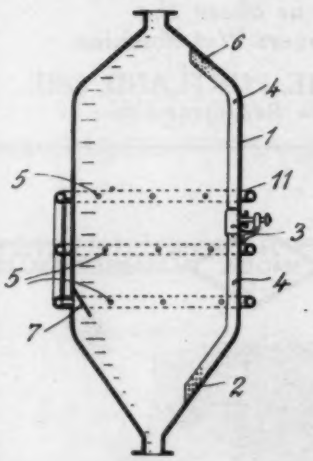
siderably. This is likewise increased by lengthening the operating time. While an increase in the speed of the machine increases the output of the same, nevertheless it decreases the efficiency. The way to improve the economy of the machine is to increase the weight of the paper rolls or their diameter. Increase of the weight of the paper rolls from 160 kilograms to 320 kilograms causes an increase of output from 11 to 35 per cent and a saving of labor of 2.5 to 2.8 per cent. It has been established that important advantages are obtained by making the diameter of the paper rolls as large as possible, by making the operating time of the calender as long as possible. Fehlhaber. Wochenblatt fuer Papierfabrikation, 1932, pages 384 to 387.

◆ Feeding Steam to Direct Heated Pulp Digesters

The pulp digester is the type in which the liquor is circulated by mechanical means. The steam is added to the digester through perforated pipes located at the mid point of the digester. The illustration is a cross-sectional view through a vertical axis of the digester. The pump (3) forces the liquor from the



lower part of the digester (1) through the screen (2) and the pipe (4) towards the top screen (6) into the upper part of the digester. The steam pipes (11) are located externally around the mid-section of the digester and are provided with steam inlets (5). These perforations are arranged at different heights. The steam inlet openings at the different heights are displaced with respect to each other in the direction of the circumference of the digester. The result is that the steam bubbles, which are carried along downward by the liquor, are completely condensed, before they come in contact with new heating steam. As may be seen at the left of the illustration, each steam inlet opening (5) may be covered by an inclined plate or screen (7), which keeps the stock away from the immediate neighborhood of the steam inlet, while the liquor flows through it. The result is obtained thereby, that the steam, which is introduced into the digester, comes into direct contact with a comparatively large volume of liquor, without being impacted with the unmovable mass of fibers. The inclined sieve plates (7) also possess an advantage in that they carry along a portion of the flow of steam and thus serve to direct the current of steam to the bottom of the digester. Einar Moretrud, Torderoed, pr. Moss, Norway. German Patent No. 544,455.

◆ Determining Hemicellulose in Spent Liquors

Various working methods for the determination of the hemicellulose content of spent liquors from the manufacture of alkali cellulose are discussed. The usual methods involve oxidation of the hemicellulose and volumetric determination of the amount of oxidizing agent consumed. Good results are obtained with potassium permanganate in acid solution, but a correction must be made if the works water itself decomposes potassium permanganate. Oxidation with potassium dichromate and sulphuric acid gives variable results unless a standard procedure is followed. The time of boiling the mixture over the Bunsen flame and the concentration of hemicellulose are important, and better results are obtained if the boiling is omitted and the heating performed on a water bath. Gravimetric methods take too long, and for rapid analysis a colorimetric method may be used in which the yellow color of the alkaline liquor is compared with those of standard solutions of known concentration of hemicellulose. H. Schmidt. Chemiker Zeitung, 1932, volume 56, pages 273-274.

◆ A New Digestion Process

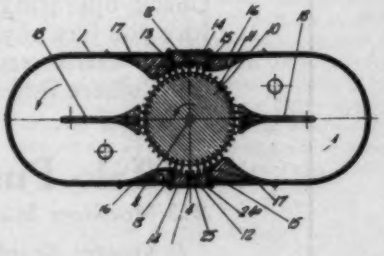
The sulphite liquor, which is used in this new digestion process, is heated externally of the digester. The liquor is alternately removed and filled into the digesters from auxiliary tanks by means of a gaseous pressure medium. The invention is based on the fact, that, in order to produce a satisfactory pulp with a good yield, care must be taken to see, that as far as possible the same pressure must be maintained within the digester during the entire progress of the process. This condition is attained by the new process by forcing the liquor over by means of a pressure gas, the pressure of which does not exceed the cooking pressure to any substantial degree. The pressure of the gas is, however, just sufficient to force the liquor from one tank into the other. Furthermore, the digester is connected with a waste gas line which is maintained under a constant backpressure. The pressure that exists in this line can be adjusted by means of safety valves, for example, which are themselves adjusted to the desired pressure. Furthermore, in order to shorten the time of digestion without using a higher pressure as far as possible, care must be taken to see that there is no interruption of the digestion process in the mass of wood or other cellulosic materials likewise at those periods, during which the digestion liquor is forced out of the wood. For this purpose, according to the new invention, a suitable gaseous or vaporous pressure medium is not used, by which the liquor, which adheres to the individual pieces of wood, etc., and penetrates them, is not diluted or replaced, but there is employed as the pressure-producing medium the gas sulphur dioxide. This new process allows the digesting materials to be in intimate contact at all times with the active digesting agent. German Patent No. 549,228.

◆ Biological Processes in Paper Manufacture

An interesting review of the various biological processes that play a part in the manufacture of paper, containing numerous references from the American, German, French and Scandinavian and Finnish trade literature. The questions of infection and rotting of wood, the formation of fungi growths, decomposition during storage, as well as methods and means for avoiding the same are discussed. Dr. B. Schulze. Zellstoff und Papier, 1932, pages 284 to 288.

◆ Beater

The illustration represents a horizontal section through the new type of beater. The beater is provided with a long trough, a vertical beater roll and a vertical bedplate as well. The beater roll is fastened to the shaft (4). On each side of the beater roll (10) the trough is provided with a vertical opening, which is closed by means of the movable plates (12). The beater roll is provided over its circumference with the knives (11). Two U-shaped guide rails (13) and (13), considerably increased in thickness and strength, for a vertical and horizontal movable bedplate (14) are provided behind each of the plates (12). Each bedplate is provided with slots for the insertion of



solid knives (15) at the upper surface that lies towards the knives of the beater roll. The outer ends of these beater roll knives are curved, so as to fit around the circumference of the beater roll. A crown plate (16) is arranged on the inner walls of the trough in connection with the guide rails (13) for the purpose of directing the stock along each side of the roll (10). A similar plate (17) is arranged on the other side of the beater roll. A midfeather (18) is arranged in both ends of the trough. The midfeathers are preferably made of wood and rest on the concrete bottom of the trough. It is apparent that the vertical located beater roll (10) and the

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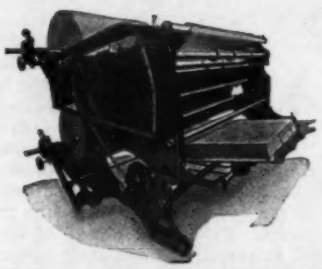

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bedplates (14) (14) form a double-acting beater. Thus there are two working processes in this type of beater as compared with one in the ordinary form of beater. The short path of travel between the two working processes has an essential advantage in materially decreasing the required power. German Patent No. 544,758.

◆ Centrifugal Machine for Purifying Pulp

The illustration shows one of the ways in which the process can be carried out by using a machine in which the thickness of the layer of heavy impurities, of the layer of purified pulp and of the layer of lighter impurities are regulated

Fig.I

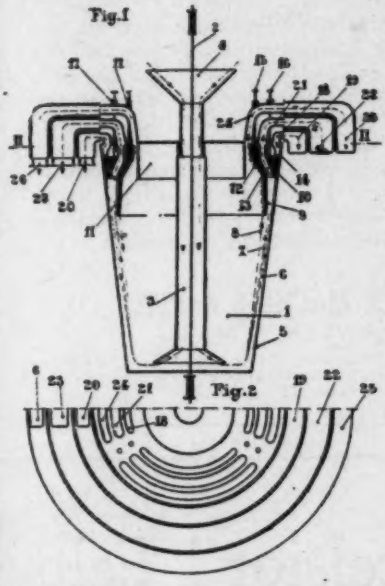


Fig.2

by circular, concentric partitions. Thus a bowl (1) turns on the shaft (2) and is provided with a central conduit (3) through which the pulp is fed to the machine. The material is introduced through the funnel (4). The centrifugal force causes the formation of layers of heavy impurities (6), purified material (7) and light impurities (8). The position of the partition walls (9) and (10) controls the separation of the three layers of material. Anciens Etablissements Cime and D. Perrier. French Patent No. 723,721.

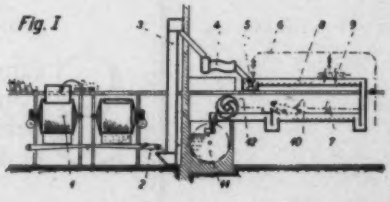
◆ Influence of Humidity on Strength of Paper

Numerous experiments have been conducted along this line in a Belgian paper works and some very interesting results have been obtained. It was established in the first place that the more a paper is filled, the less is its water content. In the second place, paper, which has been dried at 100 degrees C. regains its original water content within an hour's time. The more saturated with moisture the air, the more rapidly does the strength of the paper increase. The moisture content of the paper changes in a manner similar to the change in the moisture content of the surrounding atmosphere. The rosin content of pulp-sized paper has only a very slight influence on the increase of moisture in the paper. The degree of beating of the paper has no influence on the increase of the moisture content of the same. As far as the water-absorbing properties of paper fillers are concerned, it was established that this is nil in the case of talc, calcium carbonate and kaolin; seventeen per cent for calcium sulphate and eleven per cent for starch. The absorptivity of water in the fillers after the paper is dried is nil in the case of talc and chalk, almost nil for kaolin, 4.5 per cent for calcium sulphate and eleven per cent for starch. The following conclusions were drawn regarding the influence of humidity on the tearing strength of the paper: (1) The water content of the paper at a definite humidity is not the average of two water contents, determined at different air humidities, which differ by the same percentage from the moisture of the first measurement. (2) The same holds good for relation of the tearing strength to the humidity. (3) Two average tearing strengths, established at the same humidity, differ substantially from one another. The tearing strength of papers were determined at different humidities in a laboratory in which the humidity of the air could be regulated. A number of conclusions as well as conditions were established as essential in carrying out these experiments of which the following are the more important. From 45 deg. humidity up, the tearing strength diminishes more rapidly, the more the air approaches the saturation point. The tearing strengths, determined at different air humidity, can be less accurately calculated back to a basis of 65 deg. humidity by the use of coefficient, the lower the degree of humidity at which the measurement was made. Arendt and Wathelet. Moniteur de la Papeterie Belge, Feb., 1932.

◆ Reworking Old Paper

Unsorted old paper is treated in the apparatus shown in Figure 1 for conversion into paperboard. The paper is fed into the perforated drum (1) and the charge is then moistened with fifty to seventy per cent water. The drum is started rotating and the paper mass

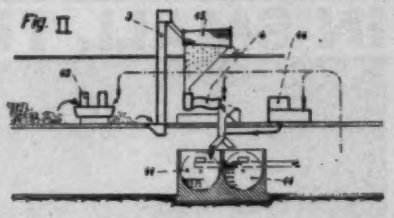
Fig. I



is disintegrated into very small pieces and thus passes through the perforations of the drum. The stock drops down on the moving belt (2) which carries it to the elevator (3) and passes through the machine (4) which serves for the purpose of disintegrating the stock into individual fibers without shortening their length. The treated stock falls into the mixer (5). Backwater is added through (6) and (7) and the stock flows through the sand catcher (8) wherein the small impurities are removed, while the devices (9) and (10) remove the finest particles of dirt, etc. Before the stock flows into the stuff chest (11), it passes through the drum (12) wherein it is concentrated to the required degree.

In the installation shown in Figure 2, the old unsorted paper is merely fed into an edge-mill (13), from which it

Fig. II



passes through a screening drum (15) and finally reaches the beater (14). The other parts of the apparatus are the same as in Figure 1. Anton D. J. Kuhn. Wochenblatt fuer Papierfabrikation, 1932, pages 399 to 401.

◆ Washing Sulphate Pulp in Oliver Filters vs. Diffusers

The advantage, which is gained by washing sulphate pulp in Oliver filters as compared with washing in diffusers, is discussed in detail. The benefits obtained are as follows: Less dilution of the waste liquor and less loss of alkali in the black liquor, which is almost free from fiber values; increased evaporating action; better control of the process; less room required for the apparatus, etc. The difficulties that arise due to the foaming of the black liquor, can be easily overcome. This is accomplished by separating the air and liquor and by using suitable pumping equipment. Furthermore, care must be taken to provide suitable collecting tanks, that is, tanks that are large and have a large surface area and small depth. The content of 11.5 kilograms of sodium oxide per ton of air-dried stock, which remains after treatment in the primary filter, can be reduced to 2.2 kilograms of sodium oxide per ton of stock by using a secondary filter. W. Ameen. Svensk Papp. Tidn., volume 34, page 471ff.

◆ Glucose in the Paper Industry

Inasmuch as glucose or grape sugar has gained a certain importance as an ingredient of paper, a few details are given regarding its properties and its handling in the paper mill. A special grade of glucose has been prepared for this purpose in a particularly hygroscopic state. It has the property, as does gylcerin to soften the pulp fibers and make them more pliable. The addition of glucose to the beater during the beating process serves to protect the pulp fibers and gives them special properties so that a superior paper is obtained. The addition of glucose increases the folding strength of the paper and makes possible more rapid hydration of

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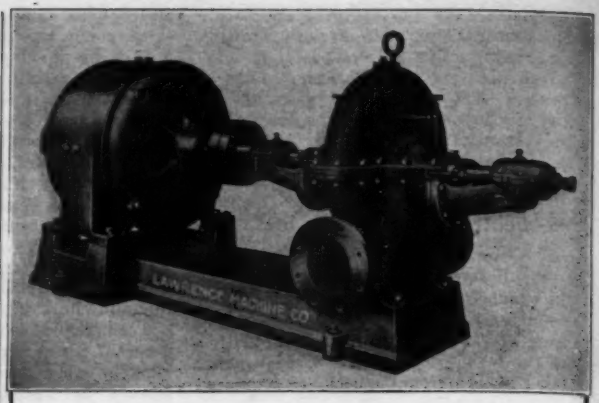

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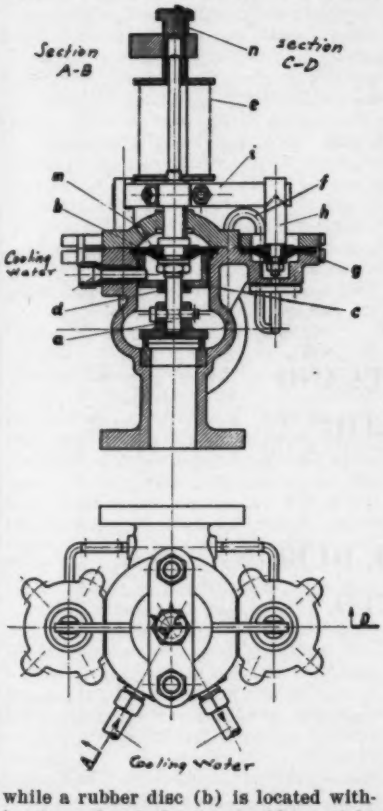
the pulp fibers during beating. It should be borne in mind that long cooking should be avoided in making up the glucose solution. This is necessary so as not to destroy its valuable properties. The color of the solution is also spoiled by prolonged boiling. Water containing lime salts should be avoided as far as possible. The best way in which to prepare a more or less concentrated solution of glucose by bringing the weighed-out quantity of glucose into boiling water when making highly concentrated solutions, and into hot water, when making lower concentrations, and agitating the mass briefly from time to time. Dr. Hans Wrede. Wochenblatt fuer Papierfabrikation, 1932, pages 465-6.

◆ Safety Valves on Digesters

The operating difficulties, which have been encountered with safety valves on digesters, are discussed, and their avoidance is indicated by means of a new type of valve. The new type of valve is shown in the accompanying illustration. The valve stem (a) is provided with a spring or a counter-weight,



while a rubber disc (b) is located within the valve body to provide a tight closure. This makes impossible the forcing of the liquor into the stem guides. The rubber disc is protected from the hot digestion liquor by means of a chamber (c). The bushings (d), which are made of acid-resistant special steel, enable tight packing around the valve stem. The chamber (c) is cooled with water and the liquor, which penetrates to a certain extent during the operation of the valve between (a) and (d) is washed away. When the valve is closed, the water enters between (a) and (d) into the body of the valve and prevents the dissolved materials in the liquor from incrustating the seat and the cone of the valve. The latter does not stick any more and works just as freely as the valve stem. The spring of the valve (e) is dimensioned in such a manner and is so adjusted, that the cone is lifted at a certain pressure and at an additional rise in pressure the entire area of the valve is opened up. A number of experiments were carried out with this type of valve to show its actual operation. The valve can be used to relieve the pressure in the digester and also for driving over the gaseous contents thereof. There are no friction parts in the valve. Reinhard Wolf. Der Papier-Fabrikant, 1932, pages 421 to 424.

◆ Separation of Constituents of Wood

The action of water and of ethyl alcohol on woods is discussed. Tests were carried out on the separation of the constituents of wood by means of a mixture of water and alcohol. The greater part of the lignin and the carbohydrates which accompany cellulose dissolve, and almost pure cellulose, containing only a little lignin and pentosan, remain. At a temperature of 180 deg. C., the action is rapid, and the most active mixture contains fifty per cent of alcohol. With increase of the water content of the solvent, increasing quantities of reducing sugars and of volatile compounds, such as furfuraldehyde are formed. The reactions involved are markedly catalyzed by hydrogen ions. The temperature and time of treatment vary little with the type of wood. Details are given of the constituents of spruce, pine, beech and ash wood. T. Kleinert and K. von Tayenthal, Zeitschrift fuer angewandte Chemie, volume 44, pages 788 to 791.

◆ Determination of Acid in Paper

This is a complicated problem, because very little is known regarding the exact nature of the acid substances in paper. It is supposed that these acid substances are aluminum sulphate and sulphuric acid and that they are completely or almost completely soluble in water. This contention is based on the fact that a little aluminum sulphate and a little sulphuric acid are always found in backwater from the paper machine and that traces of these substances remain behind in the paper during the evaporation of water from it. This is contradicted by the fact that the pulp and certain fillers in the paper absorb or change these small quantities of salts and acids. The author arrived at the conclusion that only two methods for testing paper for acid content avoid the uncertainties of the usual Kohler-Hall method. These are, namely, first, the use of a solution of such pH value that this pH is not changed by dipping the paper into the solution; or second, the use of electrometric titration. The difficulty is encountered in the first process, that according to the experiments made by the author, every indicator used gives a different result. Hence, the electrometric titration is more certain. A potentiometer with antimony electrodes is used. According to this method, two grams of the sample were pulled to pieces and mixed with 100 c.c. of boiling distilled water. The mass is cooked for two minutes, the beaker is then removed from the source of heat and stirred mechanically for half an hour. The mass is then titrated with the aid of fiftieth normal acid or alkali while being stirred. Curves were drawn from a large number of results obtained in this manner, and it was clearly seen that there must be two or more acid-containing substances in paper. S. R. H. Edge. World's Paper Trade Review, volume 97. April 22, 1932.

◆ Papermaking Inventions

Detecting Holes in the Web—An ingenious electrical device for detecting holes and tears in the web is provided in a Canadian patent issued to J. A. Audet, Bathurst, N. B., Canada. The invention provides means of indicating by sound, sight or record the presence of holes or tears in the sheet while it is being reeled. Four fine brushes, electrically connected, press against the paper and when contact is established through a hole in the paper, a bell rings and a lamp is lit at the section of the paper where the hole is to be found.

Rotary Pulp Screen—A patent on a rotary pulp screen was issued to John Stadler, Montreal, P.Q., on Feb. 2, 1932. It is described as a perforated cylinder supported on a disc at one end and radially disposed arms at the other end, an inlet passing through the disc, a ring mounted at the inlet end of the screen and roller means engaging the internal surface of the ring and positioned above the maximum level line of the stock in the screen.

Extracting Air from Paper Stock—An invention by Judson A. DeCew, Mount Vernon, N. Y., provides a method of extracting air from paper stock. The diluted suspension of fibers from the paper machine screen is passed into a tank under vacuum and pumped back to the flowbox. Patent 1,853,849, April 12, 1932.

Removing Odors of Kraft Process—U. S. patent 1,854,428, granted to B. N. Segerfelt, Bohmisch Krumau, Czechoslovakia, relates to a method of removing evil-smelling gases formed in the process of sulphate and soda pulp cooking. The gases are brought to the dew point and treated with hydrocarbons belonging to the terpene and camphor groups.

Blow Pit Treatment for Pulp—In a patent assigned by Robert W. French, Erie, Pa., to the Hammermill Paper Company (1,840,774), a blow pit of elliptical form is used. An opening at one end of the wall of the blow pit allows a stream of pulp to pass through. At the opposite end of the wall is a distributing plate in the path of the pulp stream, an opening in the wall being adapted to permit tangential introduction of a washing medium.

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The COMMERCIAL OUTLOOK

New York, August 1, 1932.

MIDSUMMER, and with it the usual seasonal shrinkage in business, has occasioned even a quieter market situation in paper than prevailed previously. Activity in the industry in recent weeks has been at about as low an ebb as the present generation of paper manufacturers and merchants have ever experienced. Buying by consumers in almost every instance has been confined to the barest of necessities and the movement of paper from manufacturing centers has fallen to such restricted dimensions that paper mills in numerous cases have shut down, if not completely for a time, then to an operating schedule of but a day or two a week.

However, there are signs visible indicating that the worst has been seen. Within the last few days a decided change has come over the business world from the standpoint of the sentimental view taken by the manufacturer, dealer and distributor, and also by the consumer. Reports have been drifting in from various industrial centers of mills in certain branches of manufacturing resuming operations, of others speeding up production and of some reverting to a full-time basis. The paper industry has shared in what appears to be an absolute upturn in manufacturing activity, and which many in various lines of business express the belief is the beginning of the end of the long-drawn-out depression that has gripped the country for a period of three years.

Paper manufacturers in some instances have witnessed an increase in orders warranting a return to normal production in their mills. True enough, the improvement has not touched all divisions of the paper industry; some are still in a very dull condition with very little or no change for the better, but sentiment within the trade is vastly improved and those manufacturers who have not experienced expansion of demand for their product are expectant that the quickening in trade in other lines will soon spread to include their goods. Money conditions are much improved; the financial world is commencing to feel the benefits of the legislation enacted by the last Congress; the stock market has exhibited broader activity during the last week than in many months and the trend in security values has been sharply upward; the textile, shoe, hat, rubber and other manufacturing industries have registered marked improvement, and retail business is reported from numerous important centers as increasing. Whether or not the sudden upturn in industrial activity is a spurt which will be short-lived remains to be proved, but there is no question whatever that a distinct change for the better has occurred. If sentiment means anything—and it does, because the attitude of those in business has much to do with making or hurting business—the increased activity seen should go on to gather momentum and pull the nation out of the industrial slump, for business sentiment is immensely improved—it has really reached a degree of mild optimism, so confident are a majority that industry and trade are due to forge ahead to broader activity, better prices and general improvement.

Production of paper in the United States in April amounted to 392,353 net tons of all grades, compared with 436,616 tons produced by identical mills in the preceding month, 401,277 tons in February last, and 402,818 tons in January, according to the monthly summary issued by the American Paper and Pulp Association. The output during the first four months of the current year reached a total of 1,633,086 tons, representing a decrease of 9.5 per cent from the total of 1,804,107 tons manufactured in the corresponding period of 1931. Shipments of paper from mills in April aggregated 398,063 tons, which was in excess of the month's output, while stocks on hand at the end of April were 251,766 tons, comparing with 258,207 tons a month before and 275,332 tons on the same date a year ago. The daily average of paper production in April was 6.6 per cent below that in March this year for identical mills and 16.1 per cent under the April, 1931, output. All grades, excepting bag paper, registered decreases in production for the four-month period this year as compared with the similar period of 1931.

Newsprint production has continued on the downslide. The output of United States and Canadian mills in June totaled 246,767 tons, comparing with 263,974 tons in the preceding month, while shipments were 248,565 tons during June, according to figures compiled by the News Print Service Bureau. United States production in June was 85,399 tons and shipments from mills were 84,255 tons, while Canadian mills made 161,368 tons and shipped out 164,310 tons. The U. S. mills produced a total of 546,757 tons of newsprint in the first six months of this year, a decline of 46,895 tons or 8 per cent contrasted with the same period a year ago, while Canadian mills made 999,885 tons in the six-month period, a decrease of 150,883 tons or 13 per cent from last year's output in the corresponding time. Total North American production in the first half of 1932 amounted to 1,691,454 tons, contrasted with 1,897,068 tons in the same period a year ago, a decline of 11 per cent. Mill stocks of newsprint at the end of June last were 35,502 tons at U. S. mills and 50,029 tons at Canadian mills, or an aggregate of 85,531 tons, compared with 87,329 tons on May 31.

Paperboard production underwent a sharp reduction in May, when mills in the United States manufactured a total of 168,288 net tons of board, against 177,899 tons in the preceding month and 232,020 tons in the similar month last year, according to statistics in the monthly summary of the board industry compiled by the U. S. Department of Commerce. Board output was at 53.1 per cent of mills' rated capacity in May, compared with 54 per cent in April this year and 73.2 per cent in May a year ago. Shipments from mills were 166,626 tons in May, contrasted with 179,590 tons in April, and unfilled orders held by manufacturers at the end of May called for 31,344 tons, against 32,607 tons a month previously. Stocks of board at mills aggregated 80,898 tons at the end of May, compared with 78,370 tons at the end of April.

Few or no publishers are taking other than contract supplies of newsprint, and some are delaying shipments from mills. The movement of print paper consequently is principally of routine character, and, of course, lacks the volume of busier times. A good many newsprint manufacturers have found it necessary to curtail production. Fine papers are in fair demand in so far as small quantities are concerned, but the market has been narrow at best and buyers have shown most interest in the lower-priced lines of bonds, ledgers and writings. Wrapping paper is in fair call, but fair only. Tissue has ruled quiet, and book papers have been sadly neglected by buyers. Some book paper mills have closed down for periods of a full week at a time. Fancy papers and specialties have been favored with spotty demand, which has developed chiefly for small lots. Boxboards have been slow, purchasers operating in the market only in routine fashion and on an ultra-reserved scale.

❖ ❖ ❖

◆ HAKON GULLANDER, of the Stora Kopparbergs Bergslags A. B., Falun, Sweden, is visiting the United States on business. The Stora Kopparbergs Bergslags A.B. stands at the head of the pulp manufacturing concerns in Sweden, if not in Europe, and Mr. Gullander, who speaks English without a trace of an accent, is studying the economic situation here with regard to possible future expansion of business. He may be reached through the New York office of his company, Stora Kopparberg Corp., 230 Park Avenue.

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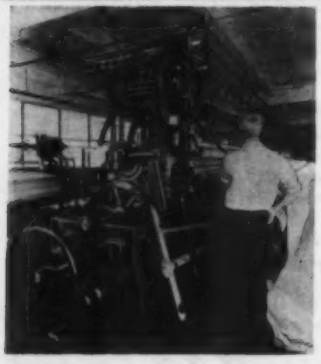

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Domestic RAW MATERIALS

◆ Papermaking Rags

It is quite evident that paper manufacturers, almost without exception, are confining their purchases of raw materials to bare requirements, as has been their wont for some time. When necessity arises, the supplies needed are readily absorbed, but the buying policy now in adoption appears to be to limit commitments to the rags, pulp, chemicals or other materials required against actual orders for paper and board. The exceptionally low prices prevailing on practically all raw materials entering into the manufacture of paper apparently are no inducement to manufacturers to stock up; it appears manufacturers are taking the view that it is advisable to keep raw material supplies in their storerooms down as low as practical under present circumstances, even though when conditions grow better they will in all likelihood be called upon to grant higher prices for raw material.

The result is that demand for papermaking rags is at a very low ebb, reflecting the greatly curtailed schedules of most mills making rag papers. There is, of course, a certain amount of routine buying, but aside from this, it might well be said activity in the rag market is close to nil. Moreover, such demand as is emanating from mills is concentrated on a few particular grades of rags. Old rags are sadly neglected by buyers who, enabled to get new cotton cuttings at such attractively low costs, are substituting the higher qualities of stock for those grades they formerly were accustomed to use. Papermakers candidly acknowledge that they appreciate the rag collection machinery of the country has been badly disrupted, that the production of rag stock from the point of view of the tonnage provided by the market for sale to consuming mills has been appreciably reduced, and also that the importation of suitable rags from foreign sources has declined to almost nothing, and yet they apparently feel the wiser policy to pursue is to cover actual needs only and let the future take care of itself, probably on the theory that when rag consumption increases and they are obliged to seek additional lots of rags, the supply will be forthcoming as it invariably has in the past.

Prices of some descriptions of papermaking rags have receded and are now lower than have been known in many, many years. Even the highest classes of stock, such as No. 1 new white shirt cuttings, are down to where purchases at around 3.75 or 4 cents a pound f.o.b. shipping points have been reported. Washables and fancy shirt cuttings are said to be available at as low as a cent per pound at dealers' points although most quotations range a little above this, packers endeavoring to secure 1.25 cents or thereabouts for these rags. New unbleached muslins are about the firmest grade of papermaking rags and are reported fetching 5.25 cents to perhaps slightly higher at shipping points. New blue overall cuttings are around 3.25 cents, light silesias 3.50 cents, and new light flannelettes 3.25 cents.

Ruling prices of old rags are problematical, so uncertain is the market and the quotations issued on such wide ranges. However, No. 1 repacked old white cottons are reported available at around 3 cents a pound and doubtless at less, while repacked thirds and blues are offered at a cent a pound at shipping points. Roofing rags have eased off to a price basis of approximately 40 cents per hundred pounds for No. 1 classification packing and 30 cents for No. 2 roofing at shipping points, with purchases feasible at lower figures in some quarters.

◆ Rope and Bagging

Paper mills seem to have all the old rope either on hand or on order needed to satisfy present requirements, and about the only life in the market has to do with shipments against back orders, according to reports. Prices nevertheless are holding their own and are more or less stationary on the low levels established some time ago, No. 1 old manila rope, foreign or domestic, selling on a basis of 1.50 cents a pound at shipping points or ex docks at American Atlantic ports. Similarly, there is little demand of consequence for old bagging, and market values are easy. No. 1 scrap burlap is available at 60 cents a hundred pounds, and roofing bagging at 30 cents or less f.o.b. shipping points.

◆ Pulpwood

Not much demand exists for pulpwood and the market is in a quiet condition. Producers are endeavoring to sustain prices and are naming approximately unchanged quotations.

◆ Mechanical Pulp

Consumers as a general thing are getting along with contract or other routine supplies of groundwood, and seldom venture into the open market to buy. The demand is exceedingly quiet, reports say, and the fact that some manufacturers are pressing for sales results in a soft price tone, and consumers are doubtless enabled to purchase in some quarters at below established market quotations. Domestic groundwood is about $20 or $21 a ton f.o.b. pulp mills, while Canadian grinders are said to be accepting $17 and $18 and perhaps less for prime pulp at shipping points.

◆ Old Paper

Reports allege that a somewhat improved market condition exists in old paper, at least as regards certain grades. Demand from board and paper mills is falling far short of a volume to have strengthening influence on prices, yet the movement into consuming channels is holding up to certain levels and mill buyers are meeting the figures quoted on the supplies wanted so long as recognized market prices are asked. The dullest spot in the market is in book stock, demand for which has decreased to unbelievable depths, and which is said to have been bought by mills at as low as $6 a ton for No. 1 heavy books and magazines f.o.b. shipping points, though a dollar or so per ton above this usually is asked. Mixed paper of No. 1 quality is selling in the East at $3 a ton at shipping points, old folded newspapers at $4 to slightly higher, old kraft paper at $12 to $13 a ton, and ordinary packing of ledgers and writings at $7. Packers are reported asking and receiving around 1.50 cents a pound for No. 1 hard white shavings, 1.25 cents for soft white shavings, and 1.50 cents for extra quality soft white shavings.

◆ Chemical Pulp

The most favorable development in the market for domestic wood pulp, from the standpoint of those on the selling side of the trade, is the reported curtailment of production of sulphite by some of the largest Pacific Coast mills. Western manufacturers evidently are following the lead of European pulp producers in cutting down the output of pulp in the hope that such action will eventually result in more favorable market values. Demand for domestic chemical pulp is slow, at best. There is a moderate movement on contracts and occasional sales of worthwhile tonnages in the open market, but buying of concerted character is almost entirely lacking. The only revisions noted in prices have been in a downward direction. Bleached soda pulp is now quoted at 2.25 cents a pound delivered paper mills, a decline of $5 per ton. The basis named on prime bleached sulphite is 2.10 cents a pound ex dock Atlantic seaboard, while unbleached sulphite of prime quality is around 1.60 cents f.o.b. pulp mills, but it is an open secret these prices are being shaded. Domestic kraft pulp is on a quotable range of 1.60 to 2 cents at producing plants, depending on quality and the haul to consuming centers.

◆ Chemicals

There is little current buying of papermaking chemicals, although reports say a steady movement of supplies on contracts is keeping up. Quoted prices have registered but slight or no changes.

◆ ◆ ◆

◆ HAMMERMILL Paper Co., Erie, Pa., announces a new duplex cover paper called Hammermill Duchrome Cover. This new paper is distinctive in that the lighter side is a step-down of tone value from the darker side. It comes in four color combinations and four finishes, in a medium weight.

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PAPER

Import and Export MARKETS

EXPORTS

Latest statistics of official character issued by the U. S. Department of Commerce in Washington show that exportations of paper and paper products from the United States continue on the downtrend. During the month of May, exports reached a value of $1,426,944, contrasted with shipments of a declared value of $1,464,793 in the preceding month, and $2,194,329 in May, 1931. Exports in the first five months of the current year reached a total value of $7,153,681, against $10,190,118 in the corresponding time of last year.

The one bright spot in paper exports —and this is of scant consequence to paper manufacturers—is the heavy shipment of overissue newspapers out of the United States, exports of this item showing a big increase this year over a year ago, the total for the first five months amounting to 90,981,950 pounds of a value of $670,525, against 75,207,776 pounds of a value of $542,464 in the same time of 1931. Newsprint exports in May totaled 1,477,500 pounds, valued at $38,887, compared with 1,096,963 pounds of a value of $35,902 in the similar month last year. Uncoated book paper shipments in May were valued at $125,880, against $82,509 in May, 1931, while wrapping paper exports decreased from a value of $140,427 in May a year ago to $89,013 in May this year. Fine paper exports reached a value of $109,979 in May, compared with $125,247 in the similar month of 1931, and building and sheathing paper exports were valued at $16,833, against $36,628 in May, 1931.

Exports of boxboard in May were valued at $43,649, contrasted with $191,451 a year ago, while other paperboard shipments amounted in value to $82,961, compared with $280,928 in May, 1931. Paper bags to the value of $47,749 were exported in May, against $79,472 last year, and exports of paper boxes and cartons reached a value of $58,694, compared with $88,470 in May of last year.

IMPORTS

◆ Wood Pulp

Probably the most significant development in the imported wood pulp situation is the altered attitude adopted by pulp producers abroad regarding sales at prevailing prices and toward the pulp market as a whole as it now exists. Manufacturers in Sweden and in other European countries are going to the extreme of shutting down their mills rather than continue to make and sell pulp at prices now obtainable in consuming markets. In numerous cases, Swedish pulp mills not involved in the strike in the pulp industry of that country have ceased manufacturing, and have announced they will remain closed until such time as they can secure more favorable prices for their product. Mills in other parts of Europe are following the same policy, and it is said that consumers in the United States and elsewhere who are accustomed to using certain mill brands of imported pulp are no longer enabled to buy such pulps.

This move on the part of European producers, coupled with the continuance of the pulp mill strike in Sweden, means that the output of chemical pulp, sulphite in particular, is being drastically curtailed. The supply situation is growing tighter, and while consumers have as yet experienced no difficulty procuring all the pulp wanted, it is recognized that a condition seems brewing where an entirely different market aspect would be created should consumption and demand suddenly undergo expansion. Latest advices indicate the strike in the Swedish mills is likely to last indefinitely. Efforts of the Government mediation commission to bring the warring factions together have failed completely, and agreement is said to be as far away as ever.

The market for chemical pulp is very quiet. American paper manufacturers are manifesting little or no desire for additional supplies, apparently having all the pulp on hand or on order that they need under their present schedule of paper production, and in some instances seeking to dispose of surplus lots of pulp. Buying during the last month has been at a minimum, and confined chiefly to small spot tonnages presumably to fill out unanticipated requirements. Nevertheless prices are holding to steady levels. The selling bases established by cooperative agreements among European producers are well adhered to other than in very exceptional instances, with imported prime bleached sulphite 2.10 cents a pound ex dock American Atlantic seaboard, prime unbleached sulphite 1.60 cents, and prime Scandinavian kraft pulp 1.50 to 1.60 cents. Some purchases are being engineered at slightly under these figures, but it is usually contended that the pulps bought at cheaper levels are not strictly prime grades, or else constitute supplies which sellers for some reason are eager to liquidate. Foreign groundwood pulp is quoted at $20 to $21 per short ton ex dock American Atlantic ports.

Imports of wood pulp into the United States in May continued on a small scale, approximating the receipts during the preceding month but falling far short of importations in the earlier months of this year. May imports of chemical pulp totaled 59,424 long tons, valued at $2,348,666, compared with 59,439 tons of a value of $2,517,700 imported in April last, and 67,563 tons of a value of $3,393,112 in May a year ago. The May imports brought the total for the first five months of the current year up to 525,638 long tons, contrasted with 460,452 long tons in the similar period of 1931. Groundwood imports in May were 11,710 long tons, valued at $236,421, making a total for the first five months of this year of 67,447 long tons, valued at $1,391,164, compared with 72,044 tons of a value of $1,822,478 in the corresponding time of 1931.

◆ Paper Stock

With a dull market obtaining, importers are bringing in few rags and other papermaking materials from foreign sources. Also, it is said that prices of similar domestic stock are generally lower than those prevailing on imported material, which is another factor leading to small imports. Official U. S. Department of Commerce figures put papermaking rag imports into the United States in May last at 6,972,288 pounds, valued at $96,092, compared with 11,372,982 pounds of a value of $123,086 imported in the preceding month, and 10,610,984 pounds of a value of $143,133 in the same month a year ago. The total for the first five months of this year was 41,411,346 pounds, valued at $537,784, against 53,218,326 pounds of a declared value of $715,006 in the similar time of 1931. Imports of other paper stock in May amounted to 8,208,753 pounds, valued at $71,855, and making an aggregate of 44,125,747 pounds of a value of $362,115 in the first five months of the current year, contrasted with 48,549,286 pounds of a value of $754,627 in the corresponding period a year ago.

◆ Paper

Importations of paper into the United States during May last reached a total value of $9,293,794, according to U. S. Department of Commerce figures, comparing with receipts of a value of $9,180,306 in April this year and $12,195,662 in May, 1931. Imports in the first five months of 1932 totaled $42,404,630 in value, against $54,730,786 in the same time a year ago. Newsprint, of course, comprised the principal imports, receipts of standard print paper in May amounting in value to $8,541,416, against $10,437,211 in the corresponding month last year. Cigarette paper to the value of $308,693 was imported in May, comparing with $1,017,675 in the same month of 1931.

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Pumps (Boiler Feed)
Buffalo Pumps, Inc.
Goulds Pumps, Inc.
Lawrence Pump & Engine Co.

Pumps (Centrifugal)
The Baker Corp.
Buffalo Pumps, Inc.
Glens Falls Mach. Works
Goulds Pumps, Inc.
Lawrence Mach. & Pump Co.
Lawrence Pump & Engine Co.
Moore & White Co.
Oliver United Filters Inc.
Smith & Winchester Co.
Warren Steam Pump Co.

Pumps (Stock)
American Paper Mach. & Eng. Works
Beloit Iron Works
Buffalo Pumps, Inc.
Glens Falls Mach. Works
Goulds Pumps, Inc.
Lawrence Pump & Engine Co.
Moore & White Co.
Smith & Winchester Co.
Warren Steam Pump Co.

Pumps (Vacuum)
Oliver United Filters Inc.

Rag Cutters
Holyoke Machine Co.
B. F. Perkins & Sons, Inc.

Rag & Paper Dusters
Holyoke Machine Co.

Recorders (Liquid Level)
Bailey Meter Co.

Recorders (Specific Gravity)
Bailey Meter Co.

Recording Instruments (Temperature, Pressure, Humidity, Flow)
Bailey Meter Co.

Recovery Systems (Chemical Pulp)
Chemipulp Process, Inc.
J. O. Ross Eng. Corp.

Reduction Gears
Terry Steam Turbine Co.

Reels
The Baker Corp.
Beloit Iron Works
Moore & White Co.
Smith & Winchester Co.

Reels (Automatic Collapsing)
Hudson-Sharp Mach. Co.

Refiners
Love Brothers, Inc.

Regulators (Feed Water)
Bailey Meter Co.

Regulators (Pulp Grinder)
General Electric Co.

Removers (Paint & Finish)
Oakite Products, Inc.

Rewinders
Cameron Machine Co.
Samuel M. Langston Co.
Moore & White Co.
Smith & Winchester Co.

Roll Grinding
Moore & White Co.

Roll Grinding Machines
Lobdell Car Wheel Co.

Roll Stands
Cameron Machine Co.
Moore & White Co.

Roller Bearing Units
Dodge Mfg. Corp.

Rolls
Beloit Iron Works
Holyoke Machine Co.
Lobdell Car Wheel Co.
B. F. Perkins & Sons, Inc.
Textile-Finish. Mach. Co.

Rolls (Embossing)
Hudson-Sharp Mach. Co.
B. F. Perkins & Sons, Inc.
Textile-Finish. Mach. Co.

Rolls (Rubber Covered)
Beloit Iron Works
Cincinnati Rub. Mfg. Co.
B. F. Goodrich Co.

Roof Drying Systems
J. O. Ross Eng. Corp.

Rotary Printing Units
Hudson-Sharp Mach. Co.
Paper Conv'ting Mach. Co.

Rust Preventatives
Oakite Products, Inc.

Safety Treads
J. T. Ryerson & Son, Inc.

Save-Alls
Glens Falls Mach. Works
Moore & White Co.
Oliver United Filters Inc.

Saws
J. T. Ryerson & Son, Inc.

Scales
Toledo Scale Co.

Scales (Continuous Weight Control)
Toledo Scale Co.

Screen Diaphragms
Cincinnati Rub. Mfg. Co.
B. F. Goodrich Rub. Co.
New York Belting & Packing Co.

Screen Plates
Union Screen Plate Co.

Screens (Flat)
The Baker Corp.
Glens Falls Mach. Works

Screens (Rotary)
American Paper Mach. & Eng. Works
The Baker Corp.
Moore & White Co.
Trimbey Machine Works

Shafting
J. T. Ryerson & Son, Inc.

Shafts (Collapsible)
Cameron Machine Co.
Moore & White Co.

Shakes
Moore & White Co.

Sheet Metal Work
J. O. Ross Eng. Corp.

Sheets (Iron and Steel)
J. T. Ryerson & Son, Inc.

Shower Pipes
Beloit Iron Works
Moore & White Co.
F. W. Roberts Mfg. Co.
Smith & Winchester Co.

Silicate of Soda
Grasselli Chemical Co.

Slitters
Cameron Machine Co.
Moore & White Co.

Slitting & Rewinding Mach.
Beloit Iron Works
Cameron Machine Co.
Hudson-Sharp Mach. Co.
Samuel M. Langston Co.
Moore & White Co.
Smith & Winchester Co.

Soda Ash
Grasselli Chemical Co.

Special Machinery
Beloit Iron Works
Hudson-Sharp Mach. Co.

Speed Changes
Moore & White Co.

Starch
Corn Prod. Refining Co.

Steam Meters
Bailey Meter Co.

Steel (Bars, Shapes, Plates, Sheets, Etc.
Joseph T. Ryerson & Son

Stock Cutters
B. F. Perkins & Son, Inc.

Stokers
Westinghouse Electric & Mfg. Co.

Stuff Chests
Moore & White Co.

Stuff Pumps
Beloit Iron Works
Moore & White Co.

Suction Box Covers
Moore & White Co.

Suction Boxes
Beloit Iron Works

Sulphite (Strong Bleached & Easy Bleaching)
The Borregaard Co., Inc.
Perkins-Goodwin Co.

Sulphur Burners
American Paper Mach. & Eng. Works
Glens Falls Mach. Works

Supercalenders
Holyoke Machine Co.
B. F. Perkins & Son, Inc.
Textile-Finish. Mach. Co.

Tachometers & Tachographs
Bailey Meter Co.

Talc
W. H. Loomis Talc Corp.

Tank Lining (Rubber)
B. F. Goodrich Rub. Co.

Tanks (Oil)
The Lunkenheimer Co.

Tanks & Vats (Wood)
New England Tank & Tower Co.

Tensile Strength & Stretch Testers
B. F. Perkins & Son, Inc.

Tester (Paper Stiffness)
Toledo Scale Co.

Testers (Bursting Strength)
B. F. Perkins & Son, Inc.

Thrashers (Rag)
Holyoke Machine Co.

Toilet Machine (Hard & Soft Roll)
Hudson-Sharp Mach. Co.

Towel (Interfolding Machine)
Hudson-Sharp Mach. Co.

Transmissions (Variable Speed)
Moore & White Co.

Trolleys (I-Beam)
Roeper Crane & Hoist Works, Inc.
J. T. Ryerson & Son, Inc.

Trucks (Dolly)
Marion Malleable Iron Wks.

Turbine (Steam)
General Electric Co.
Terry Steam Turbine Co.
Westinghouse Electric & Mfg. Co.

Turbines (Hydraulic)
Holyoke Machine Co.

Unions
Crane Co.
The Lunkenheimer Co.

Valve Balls & Discs
B. F. Goodrich Rub. Co.

Valve Specialties
The Lunkenheimer Co.
Wm. Powell Co.

Valves
The Baker Corp.
Crane Co.
Lunkenheimer Co., The
Wm. Powell Co.
Trimbey Machine Wks.

Valves (Digester)
The Baker Corp.

Valves (Electrically Operated)
General Electric Co.
The Lunkenheimer Co.

Valves (Gate)
The Lunkenheimer Co.
Wm. Powell Co.

Valves (Non-return; Emergency Stop)
The Lunkenheimer Co.
Wm. Powell Co.

Valves (Quick Opening)
The Lunkenheimer Co.
Wm. Powell Co.

Valves (Relief)
The Lunkenheimer Co.
Wm. Powell Co.

Vapor Absorption Systems
J. O. Ross Eng. Corp.

Ventilating Fans
B. F. Perkins & Son, Inc.

Ventilating Systems
J. O. Ross Eng. Corp.

Washers
Moore & White Co.

Water Filters
Glens Falls Machine Co.

Water Wheels
Holyoke Machine Co.

Wet Machines
The Baker Corp.
Glens Falls Machine Wks.
Smith & Winchester Co.

Whistles
The Lunkenheimer Co.

Winder Shafts
Cameron Machine Co.
Moore & White Co.

Winders
Cameron Machine Co.
Samuel M. Langston Co
Moore & White Co.
Smith & Winchester Co.

Wire, Steel (Plain or Coated)
J. T. Ryerson & Son, Inc.

Do YOU Know That---?

You can make better paper by the use of a FRITZ VERTICAL HYDRATOR than with beaters or any other method.

◆ ◆ ◆

The cost per ton will be less by using this machine.

◆ ◆ ◆

One FRITZ VERTICAL HYDRATOR will do the work of from six to eight 1,800 lb. beaters with a small floor space, and that the power consumed will not be more than one beater would require. (This would mean cutting out a number of motors or drives with the necessary upkeep and replacements.)

◆ ◆ ◆

With this machine you get a better brushed out fiber, making it stronger and a better clay retention.

◆ ◆ ◆

You can use a longer fiber, when prepared by this machine, than when prepared for the paper machine by any other method.

◆ ◆ ◆

You can learn many things to your advantage by writing us.

◆ ◆ ◆

Love Brothers, Inc.

Aurora :: Illinois

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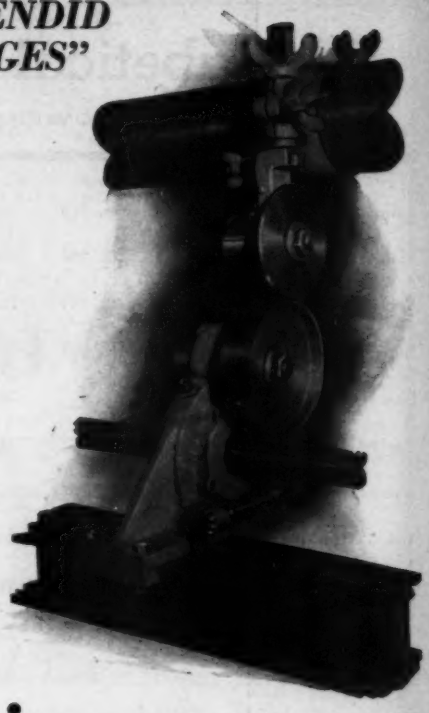
"WONDERFUL SATISFACTION—SPLENDID ROLLS . . . EXCELLENT SLITTER EDGES"

A customer's tribute to the New "M & W" Vibrationless Slitter

NOTE the ***bottom*** blade mountings . . . it's different — accessible for your convenience. Each blade is held to its shaft by the one large nut shown, and may be removed in a minute without disturbing anything else. The ball-bearing design eliminates blade wabble and greatly reduces the tendency to form slitter cracks. The lap once set stays that way indefinitely.

NO DUST — NO BAD EDGES — NO INCONVENIENCE



"Your new bottom blades of special metal cut a better edge than the cast-iron blades, and last four times as long," says another satisfied customer.

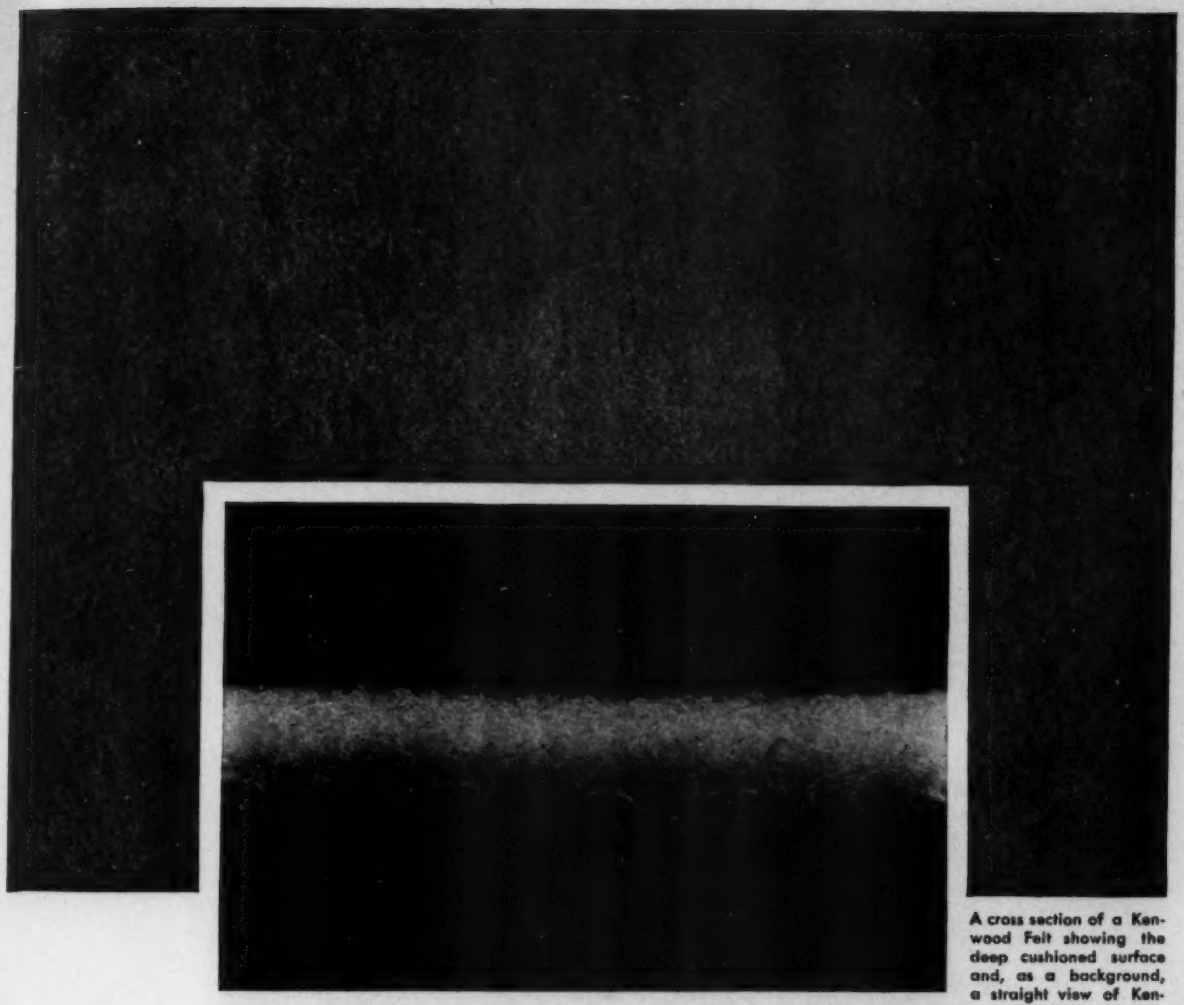
THE MOORE & WHITE COMPANY
Established 1885
PAPER MACHINE BUILDERS
15TH ST. & LEHIGH AVE. · PHILADELPHIA, PA.

Eliminate Accidents
They *can* be prevented!

THE MILLS forming the Paper and Pulp Section of the National Safety Council are eliminating costly accidents from their operations these days when accident losses are so undesirable. During the 1931 Paper Industry Safety Contest alone, fifteen paper, pulp, bag and container mills operated *without a single accident* among 2,000 employees.

The group of more than 100 companies and corporations that has reported its experience to the Council for the past five years has *cut in half* both accident frequency and accident severity rates. The National Safety Council gladly will help any company in the industry on an actual cost basis to save through safety. Full information provided without obligation whatsoever, upon request.

National Safety Council
INCORPORATED
20 North Wacker Drive Chicago



A cross section of a Kenwood Felt showing the deep cushioned surface and, as a background, a straight view of Kenwood Felt Surface.

SURFACE

Surface, when you speak of Felts, includes as its most important dimension—*depth*. Kenwood Tanned Felts are notable in performance and much of their satisfaction is due to a surface that leaves no imprint on the sheet throughout miles and miles of high production service. It's the live, resilient wool—the meticulous exactness of the yarn—the scientifically correct design. It is all of these, plus a thorough knowledge of paper mill practice that make the use of Kenwood Tanned Felts the soundest of economy in the production of Fine Papers, Newsprint, Wrapping or Board.

KENWOOD WOOL PRODUCTS

KENWOOD *tanned* FELTS

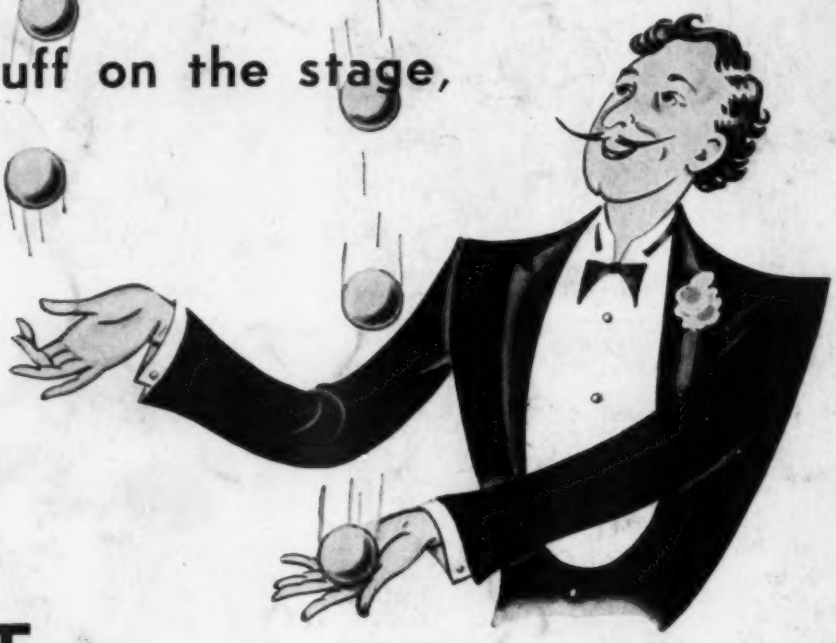
F. C. HUYCK & SONS

KENWOOD MILLS, ALBANY, N. Y.

KENWOOD MILLS LTD., ARNPRIOR, ONTARIO, CANADA

PRESTIDIGITATION

Great stuff on the stage,



BUT...

G-E Selsyn draw adjuster and G-E enclosed paper-machine speed-control panel . . . two important units that help simplify paper-machine operation

It's out of place in the paper- machine room! There, the less time required of your paper-machine tenders for "juggling" rheostats, in chasing from one end to the other, or from side to side in pursuit of elusive draw adjustments, or in shifting belts, the lower goes the unit cost of making paper.

Why require that your paper-machine tenders be prestidigitators? With General Electric sectional drive, all draw changes can be made from the front of the machine by means of simple handwheels . . . a method that is as positive as it is easy. Uniform speed of response of speed regulators at all machine speeds is assured. Driers and calenders can be started without disturbing the couch, and any number of sections can be started simultaneously. All of these factors spell economy and consistent paper quality for you.

Investigate G-E sectional drive. Your nearest G-E office will gladly coöperate. If more convenient, write General Electric Company, Industrial Department, Schenectady, N Y. for complete information.

237-59

GENERAL ELECTRIC